COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

"To Enrich Lives Through Effective and Caring Service"

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IN REPLY PLEASE
REFER TO FILE: FM-0

November 25, 2009

Ms. Tracy Egoscue
Executive Officer
Los Angeles Region
California Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Dear Ms. Egoscue:

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT
COMMENTS ON TENTATIVE WASTE DISCHARGE REQUIREMENTS
LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
PROPOSED MAINTENANCE CLEARING OF ENGINEERED EARTH-BOTTOM
FLOOD CONTROL CHANNELS, LOS ANGELES COUNTY FILE NO. 99-011

The Los Angeles County Flood Control District submits these comments, as well as the attached redline and exhibits, on the Tentative Waste Discharge Requirements (WDR) concerning the maintenance clearing of engineered earth-bottom flood control channels. These comments discuss the reasons for the more significant comments reflected in the redline markups. Minor requested wording changes are generally not discussed in the comments.

Thank you for granting an extension to this date for the District to file these comments.

If you have any questions, please contact Mr. Rudy Lee at (626) 458-4145.

Very truly yours,

GAIL FARBER
Director of Public Works

RUDY LEE
Assistant Deputy Director
Flood Maintenance Division

JQC:wy
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Enc.

cc: Regional Water Quality Control Board (L.B. Nye, Valerie Carrillo)

COMMENTS OF THE LOS ANGELES COUNTY FLOOD CONTROL DISTRICT ON PROPOSED TENTATIVE WASTE DISCHARGE REQUIREMENTS FOR MAINTENANCE CLEARING OF ENGINEERED EARTH-BOTTOM FLOOD CONTROL CHANNELS, LOS ANGELES COUNTY (File No. 99-011)

Preliminary Statement:

Before turning to specific comments and questions concerning the proposed WDR, the Los Angeles County Flood Control District (District) would like to advise the Regional Water Quality Control Board (Regional Board) and staff of several important considerations.

a. The District is charged by statute with the responsibility of protecting lives and property from flood waters. *See* Water Code App. section 28-2 (purpose of the Los Angeles County Flood Control Act is "to protect from damage from such flood or storm waters, the harbors, waterways, public highways and property in said district.") The District has worked and will continue to work with the responsible governing agencies, including the Regional Board, to ensure that the earth bottom channel maintenance activities are performed in a manner that reduces impacts on plants and wildlife in the channels. To the extent that there is a conflict between the requirement to maintain the flood control characteristics of the channels to protect public safety and property and the requirement to preserve vegetation in the channels, however, the former must take precedence. The District employs engineers with technical expertise to analyze and calculate the ability of a given channel reach to safely convey the established level of flood protection.

b. The flood control channels are not natural watercourses. They are, as the title of the WDR indicates, "engineered" channels, designed to replace the natural watercourses which historically flooded the Los Angeles basin. The engineering process to reshape the watersheds began in the early 20th Century and reduced the historic floodplains and redirected flows into engineered channels. The failure to properly maintain the channels can result in the very flooding threat that the Legislature charged the District to protect against.

c. Our vision is to ensure that our communities are flood safe and supplied with clean water. Our goal is to maintain our facilities and projects in a manner that respects the environment and enhances the communities we serve. We plan and support the delivery of an advanced system for flood protection, improving water quality, and conserving water while maximizing habitat, open space, and recreational opportunities. While we are willing to work with the Regional Board regarding the requirements of this WDR, we must ensure that these requirements do not in conflict with our obligation to protect public safety and property.

Findings:

Finding 1: This finding should reflect that the District is the applicant. We have proposed new language in the attached redline of the WDR.

Finding 6: The District is unaware of any evidence in the record to support the statement made in this finding that "the agencies involved intended to develop a more comprehensive plan in subsequent years beyond direct use of the 1997 limits." In the absence of such evidence, this statement should be removed. By contrast, the work done in the channels during the 1997-1999 time period, which resulted in the maintenance of nearly 77% of the existing vegetation in the channels, is consistent with the finding that the goal was to allow for "vegetation/habitat to remain, to the maximum extent feasible" within the earth-bottom channels. This finding should reflect that of the 203 vegetated acres, only 48.2 acres ultimately were removed, and that this removal was mitigated by the establishment of the Big Tujunga Wash Mitigation Bank, which contains 62.7 acres.

Finding 15: As far as the request for a "hydrologic analysis of each reach" referenced in this finding, the District submitted to Regional Board staff copies of the "Effects of Vegetation on the Capacity of Soft-Bottom Flood Control Channels, 1996, by County of Los Angeles Department of Public Works" and "Design Memorandum for Compton Creek Improvements, December 1993, by the U.S. Army Corps of Engineers, as well as a copy of the Compton Creek Inundation Map. We received no other comments from the Regional Board staff. Furthermore, our staff met with Regional Board staff on November 19, 2008 to discuss the issues relating to this requirement. Subsequently, new 401 Certification conditions were issued by staff. Therefore, we request that this finding be deleted, as it has no relevance to the WDR.

Finding 19: This finding indicates that "this WDR will act as a CWA Section 401 Water Quality Certification" for channel maintenance in those channels covered by a different Section 404 permit than the one as to which the Regional Board's jurisdiction to issue a 401 certification had been waived. The finding should be clarified to indicate that to the extent a Section 401 certification is required, the process for issuing a certification will be followed, and that the WDR would not automatically constitute the certification.

Finding 20: The provisions of this finding are appropriate for a Section 401 certification and do not belong in the WDR. Thus, this finding should be deleted.

FEMA Levee Certification

Permitted Activities Provisions:

Paragraph 34: This paragraph asserts that the channel clearing conducted under the WDR shall not exceed the vegetation removal identified in the 1997-98 storm season clearing levels and reflected in the Maintenance Plan. This provision fails to reflect the potential results of the Feasibility Study's hydraulic review discussed in Paragraph 42.

If the hydraulic analysis using the established level of flood protection indicates that the vegetation clearance under the Maintenance Plan has been insufficient to ensure that the reach will fulfill its engineered flood control function, then additional vegetation will be required to be removed from that reach. In other reaches, the hydraulic analysis may result in less vegetation clearance. Thus, Paragraph 34 should be modified as shown in the redline comments to reflect the results of the Feasibility Study and to confirm that the 1997-98 analysis was applicable only to reaches reviewed at that time.

Paragraph 35: The Maintenance Plan referenced in this paragraph is pre-existing, and thus was not "prepared for this project." The District has proposed changes to this paragraph that are consistent with the comments made on Paragraph 34.

Additional Activities Permitted Provisions:

Paragraph 38: The Section 401 application submitted by the District requested one-time mechanical sediment and vegetation removal for two reaches, Reach 29 and Reach 33, Medea Creek (PD T1378). This paragraph should be amended, as shown in the attached redline, to include Reach 33.

Paragraph 40: The District has several questions and comments concerning this paragraph:

1) Paragraph 31 in the general Provisions also requires submittal of an Annual Work Plan. Is the Annual Work Plan requested in Paragraph 40 the same document? The WDR should provide for only one such document, to avoid confusion. Paragraph 31 in the General Provisions should be deleted, as noted below.

2) Paragraph 40 indicates that the Executive Officer (EO) may require additional time to "add additional requirements." If the EO wishes to amend the WDR to "add additional requirements," this must be done through a formal amendment process and a noticed hearing.

3) To the extent that the Annual Work Plan covers work to be done pursuant to an approved Maintenance Plan, there is no need for the EO to review those elements of the work plan or to provide any approvals. Thus, the scope of the review by the EO should cover only work that departs in some way from a previously approved Maintenance Plan. Otherwise, the District is concerned that required maintenance will not be completed prior to the commencement of the rainy season.

4) The requirement for submittal of the Annual Work Plan by May 1 of each year coincides with the deadline for submittal of the Annual Report reflecting the previous clearing season. Thus, the deadline imposed by the May 1 date is burdensome. In addition, the District may not be in a position to determine maintenance needs by May 1. The District therefore requests that the Annual Work Plan be submitted by July 1.

5) The discussion of the thresholds by which routine maintenance might require additional review is not clear. We have proposed changes to the discussion in the redline to clarify what we believe to be the intent of this provision.

6) To the extent that additional mitigation is required, the District does not agree that mitigation ratios should "be determined on a case by case basis." The District previously has been required to mitigate impacts on a 1.3:1 basis if the removal was of native vegetation and not performed by hand clearing. We have inserted language in the redline to make clear and consistent the basis for mitigation.

7) The District is concerned that review by the EO may result in delay in meeting schedules to complete critical maintenance work in the reaches prior to the rainy season. Thus, we have requested that any EO review be completed by 60 days from receipt of the Annual Work Plan and that the review of a notice of additional routine maintenance work be completed within 15 days of receipt of the notice.

8) The District often is faced with having to conduct emergency maintenance activities, such as maintenance required following damage to the channels as the result of storms. In the redline, we have proposed that such work, which would not involve impacting additional areas outside of the footprint set forth in the Maintenance Plan, not be subject to EO review, provided that notice is provided to the EO.

Best Management Practices

Paragraph 41: The District has several concerns with the provisions in this paragraph:

1) It is unrealistic and not feasible to implement Best Management Practices (BMPs) to avoid "any" impacts to water quality. BMPs are intended to mitigate impacts. The District requests instead that the WDR require that BMPs be implemented to "minimize impacts to water quality," as shown in the attached redline, and further that such BMPs shall include all such BMPs previously utilized by the District during channel maintenance work.

2) It is not feasible for the District to conduct maintenance in a manner that will "not result in indirect impacts to water quality or beneficial uses of downstream water bodies." The requirement is itself vague and ambiguous, but the clearing of vegetation will necessarily have some impact on downstream water bodies. Moreover, the passage of flood waters is not a "discharge" covered by the WDR; the scope of the WDR is limited to the activities conducted in the actual clearing itself. The flow of flood waters is a passive activity not controlled by the District. Please see the requested redlined changes in this paragraph. The District cannot comply with the BMP requirements as written, as they impose an infeasible requirement and one that would necessarily and adversely impact the District's ability to protect public health and safety and property.

Feasibility Study

Paragraph 42: The paragraph indicates that the Feasibility Study is required to determine that the channel clearing activities have "avoided, minimized or appropriately mitigated for effects on the beneficial uses of the affected reaches or to require changes to channel clearing activities to achieve the necessary avoidance, minimization or mitigation." These determinations previously have been made with respect to those reaches covered by the Maintenance Plan and the 1997-98 study. As Finding 6 indicates, the goal of the agencies which conferred at that time was "to develop a plan that would allow vegetation/habitat to remain, to the maximum extent feasible," within the channels.

Moreover, the effort to protect the biological resources within the channels has been successful. For example, in 2002, only one territory of the least Bell's Vireo, a bird protected under federal and state law as an endangered species, existed in the channels. Today, at least 13 territories for this species exist in the channels. The work being done by the District has preserved and expanded these territories and will continue to do so. The Maintenance Plan, and the requirements of the U.S. Army Corps of Engineers, specifically requires the District to protect this and other sensitive species during their nesting season and also to maintain existing habitat.

It is infeasible for the District to agree to reduce the amount of the vegetation it clears in a reach if, in doing so, it reduces the flood carrying capacity of the reach below the established flood protection level. This remains the irreducible obligation of the District, and nothing in the WDR should affect that obligation or threaten the public safety without coming into conflict with the requirements of State or federal law and regulations.

Paragraph 43: As discussed above, the Feasibility Study requested in this paragraph cannot be conducted solely to determine whether there is a potential for vegetation to remain within a channel bottom, but also whether additional vegetation may be required to be removed. Also, the only type of vegetation that can be considered for retention is non-invasive vegetation; where invasives exist, they must be removed.

Paragraph 44: See changes set forth in attached redline to clarify the obligation with respect to the Los Angeles River watershed. It should be specifically noted that a hydraulic study already conducted of the Compton Creek channel indicates that it does not meet FEMA requirements for flood protection. Since vegetation in that channel already must be removed pursuant to the approved Maintenance Plan, there is no purpose in conducting a hydraulic study of the channel, since no modification of the Maintenance Plan would be permitted. Thus, the redline deletes this reach from the Feasibility Study requirement. A copy of the study performed for FEMA is attached to these comments as Exhibit A.

Paragraph 46: The District has a number of comments concerning this provision:

1) Please note that the nature of a study of the *hydraulic* capacity of a reach versus a *hydrological* study of a watershed needs to be distinguished. The former, which the District is prepared to perform, examines the impact that the presence of vegetation has on the ability of the reach to carry flood waters. Briefly, the presence of vegetation both slows water flow and reduces the carrying capacity of the reach. A hydraulic analysis examines how much, if any, of the vegetation can remain while still not affecting the channel's ability to handle flood waters in accordance with the established level of flood protection. . A hydrological study involves an assessment of the ability of a given portion of the watershed to discharge waters based on topography, impervious area, and other factors. Hydrological analysis is well beyond the ability of the District to perform within the time frames set forth in the WDR. Moreover, given the requirements of the paragraph, to examine Mannings Roughness Coefficients, etc., it is clear that the intent of staff was to require a hydraulic study, not a hydrological study.

2) The request to consider the impacts of the MS4 Permit, TMDLs and other water quality-based programs is not relevant, since the basic impact of those initiatives is on infiltration of dry weather urban runoff, and not storm water runoff. In fact, many of the structural BMPs called for in TMDLs, for example, require bypasses to allow high volumes of storm water to pass through the BMPs so that flooding does not result. Also, the SUSMP, TMDLs, and IRWMP programs referenced in this paragraph have multiple-year implementation schedules, making their impacts (which are, as noted above, nominal compared to the overall volumes of flood water that the channels are designed to handle) impossible to assess in the context of a Feasibility Study conducted during a single year. Also, any consideration of these programs which involve policies and constructions largely outside of the flood control channels is beyond the scope of a hydraulic study which can be completed within the time frames required in the WDR.

3) Since the protection of the public from flooding is within the responsibility and expertise of the District, the WDR should not dictate which "reasonable Manning's n" shall be used in the Feasibility Study. Those assumptions must be left to the District, as the responsible agency.

4) The Feasibility Study should not involve any assessment of biological functions or values of the reaches, since that assessment already has been conducted. Moreover, each reach is currently required to receive a biological assessment which is updated every two years. If the hydraulic study indicates that the quantity of vegetated areas in a reach should be revised, the Maintenance Plan for that reach should also reflect the change. Moreover, biological consultants retained by the District conduct annual surveys and conduct special status species surveys of every reach to be maintained. All of these surveys have been submitted to the Regional Board and are in its files. Moreover, the Section 404 Permit issued by the U.S. Army Corps of Engineers prohibits work during a large number of reaches during nesting seasons and other times of the year when species may be present in the reach.

Proposed changes reflecting these comments are in the attached redline of the draft WDR.

Paragraph 47: In most cases, the maintenance work done by the District is performed away from flowing waters. In fact, the protocols followed by the District crews call for working around flowing water, if it exists, so as to avoid adverse impacts. In many cases, the reach in question will be dry, without any running water. Thus, to the extent that any monitoring is required, it should be limited to situations where a diversion has been required.

Paragraph 48: The District has several comments concerning this provision.

1) As noted above, the Feasibility Study requires a *hydraulic* analysis, not a *hydrological* analysis.

2) The Technical Report's assessment of biological functions and values should reflect existing biological survey data already collected by the District in response to the requirements of the U.S. Army Corps of Engineers (ACOE), the Regional Board, and the California Department of Fish and Game (CDFG).

3) As discussed above, if the conclusion of the hydraulic study is that the existing vegetation in the reach must be reduced from what was called for in the Maintenance Plan, this information also must be included in the Technical report.

Paragraph 49: The District has several comments concerning this paragraph:

1) Vegetation in the channels has the potential for vigorous regrowth. There is no need for the District to re-establish native vegetation, as it will grow in areas that are not regularly maintained. The District crews will need to continue to monitor and remove invasives, however.

2) With respect to the requirement for schedules of vegetation removal frequency "in order to ensure the maximum habitat preservation, consistent with necessary flood control," the District already is limited by the Section 404 permit to work in many channels only at times of the year that will not interfere with the nesting times of certain bird species.

3) As has been discussed elsewhere in these comments, where the hydraulic analysis has disclosed the need to remove additional vegetation, this must also be part of the recommendation.

4) The Maintenance Plan referred to in the WDR is a joint effort with the ACOE, the Regional Board and the CDFG. Changes to the Maintenance Plan must be coordinated and approved by those agencies as well. Therefore, changes must be coordinated with those other agencies. The District has suggested changes in the redline that would

make the revised Maintenance Plan effective for any clearing done after the date of approval of the Maintenance Plan by all responsible agencies.

Regulatory Authority

Paragraphs 56 and 57: See redline changes to reflect changes in relevant dates

Provisions

Paragraph 4: See redline change, indicating that no submission of permits is required if the same have already been submitted.

Paragraph 6: The District does not object to putting information on its website concerning its planned maintenance activities, including a schedule and a summary of existing biological information. However, the requirement to provide specific notice to "watershed councils and other interested parties" is vague, unreasonable, and unnecessary. Those parties are not identified, and the District should be held in violation of the WDR if it neglects to notice some party. Moreover, those parties are free to go on the website at any time. Special notice should not be required. Also, while the District has no objection to providing the information to the EO, it objects to any requirement that the information be first approved by the Executive Officer. We have requested changes, as shown on the redline.

Paragraph 8: This item is duplicative of the requirements of Paragraph 13, and can be deleted.

Paragraph 11: This requirement is duplicative of other requirements contained in the draft WDR, including Paragraph 9, above. This paragraph should be deleted.

Paragraph 13: This requirement comes from the former Section 401 certification, and is not required as part of a WDR and should be deleted.

Paragraph 17: This requirement is applicable to grading projects, and not the type of work performed in the channel maintenance. Therefore, it should be deleted.

Paragraph 18: The District has conferred with its biologists regarding this item, and has a number of comments. First, there is no need to "mark properly" all areas of vegetation. At the present time, sensitive areas are marked with flagging to protect endangered or threatened species. A biological monitor is available at the request of the District and is present when sensitive species are present during maintenance activities to ensure that there is no impact on the species. Second, the District is unaware of any concerns that have been raised regarding over-removal of vegetation in the channels or any threat to endangered plant or animal species that would require the overly prescriptive requirements of this item. Third, the District objects to making its biologists available for "consultation" with Regional Board staff within 24 hours of the request. Please see changes in the redline.

Paragraph 22: See redlined change to supply monitoring results within 30 days of sampling. If the sampling is conducted at the end of the month, it is often difficult to make the 15th day deadline.

Paragraph 23: This item is not applicable to type of work being done in the channels. The BMPs followed by the District's crews and their contractors are required to minimize impacts and have been successful in the past. In that the purpose of the maintenance is largely to remove vegetation, restoring vegetation is neither advisable nor practical. Moreover, as noted above, vegetation regrows rapidly once the rainy season has ended, so there is no need to replant native vegetation. This item should be deleted, except for the last sentence.

Paragraph 24: See redline for clarifying modifications, including that mitigation is required only for the removal of native riparian vegetation (not invasives) and is not required when performing hand clearing

Paragraph 25: The District objects to the requirement in this item for mitigation at the ratio of 2:1. Past mitigation for impacts to vegetation was imposed at 1.3:1, and this ratio is appropriate, given that the riparian vegetation largely re-grows following maintenance. Moreover, any mitigation should be offset on a 1:1 basis for areas in other reaches where the Feasibility Study has indicated that additional areas that are currently being maintained can be left without degrading the channel's flood control capacity. Also, no mitigation should be required for the removal of invasive vegetation or for maintenance involving hand clearing. Also, if drains transferred from developers were subject to mitigation in previous certifications, no additional mitigation should be required. These changes are set forth in the redline.

Paragraph 26: The District does not believe that the Mitigation Plan needs to be submitted to the EO or 401 Certification Unit staff prior to its scheduled clearing. Mitigation will be required, but the District is concerned that any negotiations regarding the scope and performance of the Mitigation Plan (which is itself unrelated to the conduct of the maintenance) will delay the maintenance and create a possible threat to the public safety. Also, to the extent that the Mitigation Plan will also require the approval of other agencies, delays could be extensive. Since the District generally has only two months to conduct the clearing, from September 1 to November 2, such delays could affect public safety. The District also objects to the EO being given the option to make modifications to the Mitigation Plan instead of requiring it to be re-submitted by the District. The redline addresses these comments.

Paragraph 27: While the District would attempt to find mitigation areas in the same watershed, "the vicinity of the impact reach" would rarely be feasible in the downstream ultra-urban areas of the watersheds. We have proposed a modification that would allow mitigation to occur other than in the same watershed so long as the District can demonstrate that such areas do not exist.

Paragraph 30: The District has a number of comments on this item:

1) Given that the WDR will not be considered for approval by the Regional Board until at least the February 2010 Board meeting, and that maintenance clearing has largely been completed for 2009, the requirement to submit the Annual Report and Mitigation Monitoring Report should commence on April 1, 2011, and concern the 2010 maintenance season.

2) The requirement in sub-Paragraph 30(d)-(f) to provide documentation of vegetation, trash and sediment removed from project areas is not feasible, as this debris is combined when removed from the project site. There also is no way to segregate and weigh the debris at the project site. To do so would be prohibitively expensive and would also slow down the required maintenance activity, which could have adverse consequences to any species in the reach being maintained. Also, there is no need for this information, as it does not go to any requirements to protect beneficial uses in the reaches.

3) The reference in sub-Paragraph 30(g) to provide GPS coordinates of "mitigation areas" is vague and ambiguous. Does this refer to mitigation areas required as the result of new vegetation removals that require mitigation? Please clarify requirement.

4) The requirement in sub-Paragraph 30(j) to provide water monitoring results in "an easy to interpret format" is vague and ambiguous. The District should not be placed in the position of potentially being in violation of the WDR if staff believes that the monitoring results are not "easy to interpret." This requirement should be deleted.

5) The District objects to the requirement in sub-Paragraph 30(n) that it provide a certified Statement that all conditions of the WDR have been met. This requirement provides the potential for another avenue of violation if, for example, the Regional Board staff finds a minor violation of the WDR as to which the District was unaware or as to which it believed no violation had occurred. Such a certification requirement is not part of other WDRs approved by the Regional Board and should not be part of this one. The District already is under an obligation to comply with the WDR.

Paragraph 31: See comments regarding this requirement and the requirement to submit an Annual Workplan set forth in Paragraph 40, above. This paragraph should be deleted, to avoid confusion over the applicability of such similar paragraphs.

Enforcement

Sub-Paragraph 37(c) (erroneously identified in draft as second Paragraph 37(b): While the Regional Board has jurisdiction to add or modify conditions of the WDR, it can do so only in a noticed hearing. And since this is covered in Paragraph 38, this subparagraph should be deleted.

Paragraph 38: While the Regional Board has jurisdiction to terminate or modify, with cause, a WDR, it lacks jurisdiction to take any action to prevent the District from fulfilling its statutory duty to protect public safety and property through the maintenance of the flood control channels. Nothing being done by the District to maintain the channels represents an endangerment to public health or the environment. The prevention of that maintenance, however, would represent such an endangerment.

Paragraph 39: The Regional Board staff has authority to require, pursuant to Water Code Section 13267, additional technical or monitoring reports if the need for that information overcomes the cost of requiring it. However, the Regional Board cannot require "any information the Regional Board may request," as set forth in this paragraph. It should be deleted, as shown in the redline.

Paragraph 40: As set forth in the comment to Paragraph 38, the Regional Board cannot rescind the ability of the District to perform its lawful duties, to protect public safety and property through the maintenance of the flood control channels. Thus, the WDR cannot provide that it may be terminated, which would potentially prohibit the ability of the District to perform maintenance on the channels.

Additional Comments

Water Code Section 13241 and other Findings: The draft WDR does not provide any findings as to the factors set forth in Water Code section 13241. Pursuant to Water Code section 13263(a), the Regional Board must make findings regarding Section 13241, as well as the other required findings in Section 13263(a).

Comments from the

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
LOS ANGELES REGION

ORDER No. R4-2009-00XX

WASTE DISCHARGE REQUIREMENTS (WDR) FOR:

LOS ANGELES COUNTY FLOOD CONTROL DISTRICT ~~EPARTMENT OF PUBLIC WORKS~~ (DISCHARGER),
PROPOSED MAINTENANCE CLEARING OF ENGINEERED EARTH-BOTTOM FLOOD CONTROL CHANNELS, LOS ANGELES COUNTY (File No. 99-011)

The California Regional Water Quality Control Board, Los Angeles Region, hereinafter Regional Board, finds that:

1. The ~~County of Los Angeles Department of Public Works (County)~~ Los Angeles County Flood Control District (District), is responsible for providing flood control through a network of channels (which are also waters of the State) throughout Los Angeles County to ensure public safety. Adequate channel capacity needs to be maintained in order to avoid any loss of life or property due to floods. Such maintenance is required by California Water Code (CWC) Appendix § 28-2.

2. Channel capacity is maintained by clearing sediment, vegetation and debris within the channel to an engineered, pre-designed level.

3. For dredge and fill activities such as channel clearing, the Clean Water Act (CWA) requires permitting from the Army Corps of Engineers (ACOE) under CWA Section 404 and Water Quality Certification by the State under CWA Section 401. In addition, under the State of California Fish and Game Code, Section 1600, such activities are also regulated by a Streambed Alteration Agreement (SAA) issued by the California Department of Fish and Game (CDFG).

4. Such discharges may also be regulated under the State of California's Porter-Cologne . Water Quality Control Act by Waste Discharge Requirements (WDR). Pursuant to ~~California Water Code (~~CWC~~)~~ section 13263, the Regional Water Quality Control Boards are required to prescribe waste discharge requirements (WDRs) for any proposed or existing discharge unless WDRs are waived pursuant to CWC section 13269.

Background/History

5. In 1997, the District~~County~~ proposed complete clearing of 100 earth-bottom channels in anticipation of the El Nino storm season, representing a total of 886 acres. Of this acreage, approximately 203 acres were vegetated.

6. In 1999, a Streambed Alteration Agreement, Memorandum of Understanding was entered into by the District~~County~~ and CDFG (MOU 5-076-99). During the time of the MOU development, the Regional Board and the ACOE developed the first programmatic permit

and certification for the earth-bottom channel maintenance activities utilizing limits developed for the 1997, pre El Nino, clearing.

6. ~~However, the agencies involved intended~~

7. ~~Los Angeles County Department of Public Works Waste Discharge Requirements Earth-Bottom Flood Control Channels to develop a more comprehensive plan in subsequent years beyond direct use of the 1997 limits.~~ The agencies intended for ~~goal was to develop a plan that would allow for~~ vegetation/habitat to remain, to the maximum extent feasible, within these earth-bottom channels. Of the approximately 203 vegetated acres, only 48.2 acres were authorized for clearance. Also the District established a mitigation area for the establishment of 62.7 acres of new vegetation.

7. The District's~~County's~~ vegetation and debris clearing (maintenance) activities were permitted by the ACOE under CWA Section 404 Nationwide Permit 31 "Maintenance of Existing Flood Control Facilities" in 1998 which was certified by the Regional Board under CWA Section 401 Water Quality Certification (File No. 99-011) in 1999.

8. The ACOE has authorized this work under Nationwide Permit 31 "Maintenance of Existing Flood Control Facilities." The ACOE (after evaluation of updated information), has reissued the Nationwide Permit every two years since 1998. The latest Nationwide Permit was issued in September 2008.

9. The number of soft bottom channels authorized to be maintained under the Nationwide Permit has changed during each permit cycle due to channels being combined together, or the addition of new channels. The ACOE divides channels into reaches that it considers to be sensitive and non-sensitive based on a Biological Opinion from the US Fish and Wildlife Service. The ACOE normally incorporates special conditions, such as avoidance of nesting seasons or hand clearing, for reaches it deems to be sensitive. The 2008 ACOE Section 404 Permit issued to the County contains such conditions.

10. The Water Quality Certification was renewed by the Regional Board on October 17, 2003, authorizing maintenance of 99 earth-bottom channels. At that time, the ACOE permitted maintenance of the same channels in a letter dated October 21 (61 channels), 2003 and in a letter dated December 22, 2003 (17 channels) under Nationwide Permit 31. ACOE total channel numbers differ from the CDFG or Regional Board Certification total channel numbers because the ACOE combined channels in their permits.

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11. In 2003, the State Water Resources Control Board issued State Water Resources Control Board Order No. 2003 - 0017 - DWQ, "General Waste Discharge Requirements for Dredge and Fill Discharges that have received State Water Quality Certification", which requires compliance with all conditions of Water Quality Certifications. The 2003 renewal of the Water Quality Certification also regulated the discharges from earth- bottom channel maintenance under that order.

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12. The 2003 renewal of the Water Quality Certification was amended in September 2006. The amended Certification allowed for maintenance clearing activities in earth-bottom channel reaches within the County of Los Angeles. The amended Certification expired on March 15, 2007.

13. On March 14, 2007, a certification application package was submitted with attachments requesting renewal and amendment of the Certification. The District~~County~~ requested to

renew and further amend the Certification to include additional channel reaches and modify current Maintenance Plans. The application was deemed complete on July 10, 2008.

14. The amended Certification was extended by the Regional Board by letter on September 10, 2007 until March 15, 2008, and extended by letter again on August 29, 2008 until January 31, 2009.

~~15. The Regional Board letter of August 29, 2008, which extended the Certification, required certain information be submitted to the Board by November 14, 2008. To wit:~~

> ~~By this letter, we require the County to submit to us a technical report with a reach by reach list of all the reaches proposed to be included in the renewed Certification with a hydrologic analysis of each reach and a assessment of the biological functions and values for each reach. This report shall be submitted by November 14, 2008 which will ensure we can complete the renewed certification in timely manner.~~

~~The required information was not submitted.~~

~~16.~~15. A tentative Certification, "99-011, 2009 renewal" was released for public comment on July 6, 2009. Written comments were accepted until 5:00 p.m. on August 5, 2009. Response to comments and a revised tentative Certification were prepared and published on the Regional Board website.

17. The Certification "99-011, 2009 renewal" was unable to be issued by the Regional Board because more than one year had passed from submission of a complete application (CWA SEC. 401. [33 U.S.C. 1341] paragraph (1). Accordingly, pursuant to Federal Law, the District~~County~~ was authorized to proceed pursuant to Nationwide Permit No. 31 without conditions imposed by the Regional Board in the permit. To ensure compliance with State Water Quality Standards, the Basin Plan and other applicable Regional and State policies for Water Quality Control, these waste discharge requirements are adopted to regulate the District's ~~County's~~ earth-bottom channel maintenance activities. The channel clearing activities continue to be regulated under and must separately comply with the provisions of the District's~~County's~~ CWA Section 404 permit and the CDFG SAA.

18. These Waste Discharge Requirements include 10 new channel reaches in addition to the reaches previously included in the Certification, including two (2) channel reaches with 401 Certifications recently issued to a developer that are now being transferred to the District~~County~~ for future maintenance activities. These Waste Discharge Requirements also include the deletion of several reaches previously covered by the Certification that are no longer earth-bottom channels.

~~19.~~ The current CWA Section 404 permit, Nationwide Permit 31, issued by the ACOE authorizes maintenance in 91 channels. If the District~~County~~ obtains a CWA Section 404 permit for the additional channels covered by this WDR then the applicable provisions of this WDR will be incorporated into a Section 401 Water Quality Certification for the additional channels ~~also articulate the Regional Board's necessary requirements~~ to ensure that the discharge of dredge or fill material is protective of State Water Quality Standards. ~~and this WDR will act as a CWA~~

~~Section 401 Water Quality Certification for channel maintenance as described herein, for those channels.~~

~~20. Pursuant to section 3860, Title 23, California Code of Regulations (23 CCR), the following three standard conditions shall apply to these new reaches:~~

~~a this certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the California Water Code and 23 CCR section 3867 et seq.;~~

~~a. this certification action is not intended and shall not be construed to apply to any activity involving a hydroelectric facility and requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license unless the pertinent certification application was filed pursuant to 23 CCR subsection 3855(b) and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought;~~

~~b. this certification is conditioned upon total payment of any fee required pursuant to 23 CCR division 3, chapter 28, and owed by the applicant.~~

21. Neither this WDR, nor the previous Certification, authorize any new construction or modification of flood control facilities.

A

22. The District~~County~~ developed a Maintenance Plan for the Annual Clearing of Earth-Bottom Control Channels in 1999 in conjunction with District,~~County~~ ACOE, CDFG and Regional Board. The current Maintenance Plan to which the ACOE, CDFG, Regional Board and the District~~County~~ all agree is the 1999 Maintenance Plan.

V

FEMA Levee Certification

23. ~~Currently, T~~the District~~County~~ is a participating community in the National Flood Insurance Program (NFIP). The Federal Emergency Management Agency (FEMA) administers the NFIP, identifies flood hazards, assesses flood risks, and provides appropriate flood hazard and risk information to communities. This information is provided through Flood Insurance Rate Maps (FIRMs). FEMA is currently updating these maps and modernizing FIRMs. This effort is called Flood Map Modernization or Map Mod.

24. FEMA has required all levee owners to certify their levees before mapping them in Map Mod. Property owners in the communities protected by these levees have a 1-percent-annual-chance (100-year flood) level of flood protection and will likely not be required to secure flood insurance by lenders.

25. The District~~County~~ has undertaken ~~is currently undertaking~~ the effort to certify 65 miles of levees in the County of Los Angeles. The District~~County~~ is the lead for Compton Creek (partially, with ACOE), San Gabriel River, Coyote Creek, Dominguez Channel, Santa Clara River, and Los Cerritos Channel.

26. The levee certification consists of three main technical components:
    1. ~~Hydrological and~~ Hhydraulic ~~(H&H)~~ analysis;
    2. Subsurface soil exploration and geotechnical/structural (design) analysis; and
    3. Formal Operation and Maintenance (0 & M) Plan and Report.

27. The completed certification work has been submitted ~~is due~~ to FEMA. ~~on, 2009~~. ~~Once the documentation is submitted,~~ FEMA may accredit the levee systems, where appropriate, and present the updated, accurate flood hazard and risk information on the maps and related documents.

28. In order to obtain a FEMA certification for the levees, the District~~County~~ is required to demonstrate that maintenance of the channels will alleviate flood hazard conditions to the adjacent residents.

IT IS HEREBY ORDERED that the Los Angeles County Flood Control District~~Department of Public Works~~, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, shall comply with the following, pursuant to authority under Cal. Water Code Sections 13263 and 13267.

A

Permitted Activities

29. The District~~County~~ proposes to clear vegetation and debris from 99 earth-bottom channel reaches in order to provide flood control and protect human health and property.

30. The 99 channels include a total of 45 miles of waterways throughout Los Angeles County and approximately 787 acres of jurisdictional waters of the United States.

V

31. The reaches listed in Table 1 are included under this WDR. This list is consistent with the District~~County~~ list updated and sent to the Regional Board on July 6, 2009 and with the list in the ACOE permit dated September 8, 2008 (with exceptions noted).

Table 1. Reaches Included

	Name	County Reach No.	Hydro-Unit No.	Beneficial Uses	Length (ft)	Area (acre)
Los Angeles River Watershed						
1	Bell Creek	1	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD	196	0.90
2	Dry Canyon Creek	2	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD.	1546	1.24
3	Santa Susana Creek, tributary to Browns Canyon Creek	3	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD	75	0.06
4	Browns Canyon Creek	4	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD.	1243	3.00
5	Caballero Creek, West Fork	5	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD	652	1.30
6	Caballero Creek M.C.I., East Fork	6	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD	160	0.35
7	Bull Creek	7	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD	2602	5.61
8	Tributary to the Sepulveda Flood Control Basin Project No. 470 outlet	8	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD, WET	529	0.30
9	Tributary to the Sepulveda Flood Control Basin Project No.106	9	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD, WET	120	0.12
10	Tributary to the Sepulveda Flood Control Basin Project No. 469	10	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD, WET.	4194	7.12
11	Haines Canyon Creek	12	405.23	MUN, GWR, REC-1, REC-2, WARM, WILD, RARE	437	0.40
12	Tributary to Hansen Lake Project No. 5215 Unitl	13	405.23	MUN, GWR, REC-1, REC-2, WARM, WILD, RARE	537	0.55
13	May Canyon Creek	14	405.22	MUN, GWR, REC-1, REC-2, WARM, WILD, RARE	690	0.63

	Name	County Reach No.	Hydro -Unit No.	Beneficial Uses	Length (ft)	Area (acre)
14	Pacoima Wash	15	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD, RARE.	4762	5.25
15	Verdugo Wash-Las Barras Canyon channel inlet	16	405.24	MUN, GWR, REC-1, REC-2, WARM, WILD.	130	0.07
16	Sheep Corral Channel, tributary to Verdugo Wash	17	405.24	MUN, GWR, REC-1, REC-2, WARM, WILD.	300	0.14
17	Engleheard Channel, tributary to Verdugo Wash	18	405.24	MUN, GWR, REC-1, REC-2, WARM, WILD	800	1.10
18	Pickens Canyon, tributary to Verdugo Wash,	19	405.24	MUN, GWR, REC-1, REC-2, WARM, WILD	2406	3.42
19	Webber Channel, tributary to Halls Canyon Channel	20	405.24	MUN, IND, PROC, GWR, REC-1, REC-2, WARM, WILD	115	0.13
20	Webber Channel (main channel inlet at bridge), tributary to Halls Canyon Channel	21	405.24	MUN, IND, PROC, GWR, REC-1, REC-2, WARM, WILD	25	0.03
21	Halls Canyon Channel	22	405.24	MUN, IND, PROC, GWR, REC-1, REC-2, WARM, WILD	2290	2.63
22	Compton Creek	24	405.15	MUN, GWR, REC-1, REC-2, WARM, WILD, WET	11000	30.30
23	Los Angeles River	25	405.12	MUN, IND, PROC, GWR, NAV, REC-1, REC-2, COMM, WARM, EST, MAR, WILD, RARE, MIGR, SPWN, SHELL, WET	4800	56.20
				totals:	39609	121
Dominguez Channel Watershed						
24	Tributary to Dominguez Channel Project No. 74	26	405.12	MUN, NAY, REC-1, REC-2, COMM, WARM, EST, MAR, WILD, RARE, MIGR, SPWN.	900	0.35
25	Wilmington Drain, tributary to Harbor Lake	27	405.12	MUN, REC-1, REC-2, WARM, WILD, RARE, WET. .	3584	7.87
				totals:	4484	8

	Name	County Reach No.	Hydro -Unit No.	Beneficial Uses	Length (ft)	Area (acre)
Malibu Creek Watershed						
26	Triunfo Creek	28	404.25	MUN, GWR, REC-1, REC-2, WARM, WILD, RARE	474	23.00
27	Las Virgenes Creek	29	404.22	MUN, REC-1, REC-2, WARM, COLD, WILD, RARE, MIGR, SPWN, WET	371	1.16
28	Stokes Canyon Channel, tributary to Las Virgenes Creek	32	404.22	MUN, REC-1, REC-2, WARM, COLD, WILD, RARE, MIGR, SPWN, WET	2255	1.40
29	Medea Creek (PD T1378)	33	404.23	MUN, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE, WET.	946	0.69
30	Medea Creek (PD T1005) Main Channel Outlet	34	404.23	MUN, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE, WET	405	0.19
31	Medea Creek under Route 101	35	404.23	MUN, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE, WET	85	0.14
32	Cheseboro Main Channel Inlet, tributary to Medea Creek,	36	404.23	MUN, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE, WET	56	0.08
33	Medea Creek, downstream of Agoura Road	37	404.23	MUN, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE, WET	170	0.47
34	Lindero Creek	38	404.23	MUN, REC-1, REC-2, WARM, WILD	187	0.19
				totals:	4949	27
San Gabriel River Watershed						
35	San Gabriel River, Beatty Channel Outlet	39	405.42	MUN, IND, PROC, AGR, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE	145	0.32
36	San Gabriel River, downstream of Santa Fe dam	40	405.41	MUN, GWR, REC-1, REC-2, WARM, WILD, RARE	31370	254.22
37	Walnut Creek	41	405.41	MUN, GWR, REC-1, REC-2, WARM, WILD, WET.	5438	40.90

	Name	County Reach No.	Hydro -Unit No.	Beneficial Uses	Length (ft)	Area (acre)
38	San Jose Creek 1000' downstream from end of concrete at COE Station 87+25.00	42	405.41	MUN, GWR, REC1, REC2, WILD, WET	80	2.75
39	San Gabriel River — upper	43	405.42	MUN, IND, PROC, AGR, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE	6500	74.61
40	San Gabriel River, Rubber Dams	44	405.42	MUN, IND, PROC, AGR, GWR, REC-1, REC-2, WARM, COLD, WILD, RARE	31900	175.76
41	Inlet Walnut Creek	98	405.41	MUN, GWR, REC-1, REC-2, WARM, WILD, WET	30	0.03
				totals:	75463	549
Santa Clara River Watershed						
42	Sand Canyon, Main Channel Inlet, tributary to the Santa Clara River	45	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	102	0.05
43	Main Channel Outlet, tributary to the Santa Clara River,	46	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	80	0.06
44	Santa Clara River (PD 1733)	47	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	1656	0.76
45	Mint Canyon Channel, Sierra Hwy & Adon Ave, tributary to the Santa Clara River,	48	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD.	1800	3.10
46	Mint Canyon Channel, Adon Ave & Scherzinger, tributary to the Santa Clara River	49	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD	394	0.68
47	Mint Canyon Channel, Solomint & Soledad, tributary to the Santa Clara River	50	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	669	1.54

	Name	County Reach No.	Hydro -Unit No.	Beneficial Uses	Length (ft)	Area (acre)
48	Mint Canyon Channel, (PD 1894)/Santa Clara River, tributary to the Santa Clara River,	51	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD	932	6.40
49	Sierra Hwy Rd Drainage, tributary to the Santa Clara River	52	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD.	880	0.40
50	Santa Clara River Non-main Channel. (PD 832) 25' downstream of Sierra Hwy	53	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	45	0.03
51	Santa Clara River Non-main Channel. (PD 832) 821' downstream of Sierra Hwy	54	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	298	0.31
52	Santa Clara River Main Channel, (PD's 910, 1758,1562 unit 2)	55	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	3014	-
53	Santa Clara River Main Channel. (PD 832)	56	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	452	0.47
54	Whites Canyon, tributary to Santa Clara River	57	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	696	2.64
55	Santa Clara River Main Channel (PD 374)	58	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	2064	
56	Santa Clara River Main Channel (PD 1339 & 374)	60	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET..	3258	-
57	Santa Clara River Main Channel (PD 659)	61	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	1634	1.50
58	Santa Clara River Main Channel (PD 659 & 754)	62	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	3032	2.80

	Name	County Reach No.	Hydro-Unit No.	Beneficial Uses	Length (ft)	Area (acre)
59	Oak Ave Rd Drainage, tributary to Santa Clara River,	63	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	900	0.85
60	Soledad Canyon Road drain, tributary to Santa Clara River	64	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	577	1.03
61	Santa Clara River Main Channel (**PD** 1538)	66	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	711	1.04
62	Bouquet Canyon, Upper	67	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, COLD, WILD, SPWN, WET	6176	16.30
63	Bouquet Canyon, Middle	69	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, COLD, WILD, SPWN, WET	6812	17.97
64	Bouquet Canyon, Lower [not covered by Sept 8, 2008 ACOE permit]	70	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, COLD, WILD, SPWN, WET	2954	-
65	Santa Clara River Main Channel (**PD** 1946)	71	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	346	1.01
66	South Fork of the Santa Clara River, Smizer Ranch	72	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WIL	100	0.14
67	Wildwood Canyon Channel MCI (PD T361), tributary to the South Fork of the Santa Clara River	73	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD	1	0.05
68	Wildwood Canyon Channel (PD T361), tributary to the South Fork of the Santa Clara River	74	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD.	116	0.02
69	South Fork of the Santa Clara River (PD's 725, 916, 1041, &1300)	75	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD.	13965	-

	Name	County Reach No.	Hydro -Unit No.	Beneficial Uses	Length (ft)	Area (acre)
70	Pico Canyon (PD 813), tributary to the South Fork of the Santa Clara River	76	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD.	4120	4.26
71	Newhall Creek Outlet, tributary to the South Fork of the Santa Clara River	77	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD.	2136	6.29
72	Placenta Creek, tributary to the South Fork of the Santa Clara River	78	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD	440	1.16
73	South Fork of the Santa Clara River, Valencia Blvd Bridge Stabilizer	79	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD	167	1.17
74	South Fork of the Santa Clara River (PD's 1947 & 1946)	80	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD	2804	8.18
75	Santa Clara River Main Channel (PD 2278)	82	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	865	4.80
76	Violin Canyon, tributary to Castaic Creek,	86	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE	946	1.30
77	Old Road Drain Outlet, tributary to Castaic Creek	87	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE.	240	0.19
78	Hasley Canyon Channel Upper (PD T1496)	88	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	1085	0.42
79	Tributary to Santa Clara River, Hasley Canyon South Fork	89		MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	341	0.28
80	Tributary to Santa Clara River, Hasley Canyon Lower (North Fork)	90	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	1,189	0.68

	Name	County Reach No.	Hydro-Unit No.	Beneficial Uses	Length (ft)	Area (acre)
81	tributary to Santa Clara River, San Martinez Chiquito Canyon, Kenington Road	91	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	530	0.31
82	tributary to Santa Clara River, San Martinez Chiquito Canyon, North Fork	92	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	637	0.29
83	Tributary to Santa Clara River, San Martinez Chiquito Canyon, Kenington Road /Val Verde Park	93	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	634	0.56
84	Tributary to Santa Clara River, San Martinez Chiquito Canyon, Val Verde Park/Madison Street	94	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	2,445	1.57
85	Little Rock Wash, Project No. 1224 from Avenue T to Confluence of Little Rock Creek	95	403.55	MUN, AGR, GWR, REC1, REC2, WARM, WILD.	1,883	7.95
86	Arroyo Calabasas PD 1591	96	405.21	MUN, REC-1, REC-2, WARM, WILD	320	0.92
87	Tributary to Castaic Creek PD 1982	97	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE	2,000	2.30
88	Kagel Canyon Creek	99	405.23	MUN, GWR, REC-1, REC-2, WARM, WILD	4858	1.67
89	Dry Canyon Creek	100	405.21	MUN, GWR, REC-1, REC-2, WARM, WILD	60	0.05
90	Violin Canyon Tributary to Castaic, (PD 1707 & 2312) [not covered by Sept 8, 2008 ACOE permit]	101	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE	**1817**	

	Name	County Reach No.	Hydro -Unit No.	Beneficial Uses	Length (ft)	Area (acre)
91	Violin Canyon Tributary to Castaic, (PD 2275) [not covered by Sept 8, 2008 ACOE permit	102	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC1, REC-2, WARM, WILD, RARE	978	
92	Bouquet Canyon Channel (PD 2225)	103	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, COLD, WILD, SPWN, WET	1824	
93	Castaic Creek (PD 2441 Units 1 & 2) [not covered by Sept 8, 2008 ACOE permit]	104	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE.	2186	
94	San Francisquito Canyon Channel (PD 2456) [not covered by Sept 8, 2008 ACOE permit]	105	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE; SPWN; WET.	833	
95	Caustic Drain Outlet	106	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE	147	
96	The Old Road Channel RMD Channel) [not covered by Sept 8 , 2008 ACOE permit]	107	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	943	
97	Pico Canyon (PD 2528) [not covered by Sept 8, 2008 ACOE permit]	108	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET.	2910	
98	Santa Clara River - S. Bank W. of Mcbean Pkwy MTD1510 [not covered by Sept 8, 2008 ACOE permit]	109	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	371	
99	Hasley Canyon Channel(PD2262) [not covered by Sept8, 2008 ACOE permit]	110	403.51	MUN, IND, PROC, AGR, GWR, FRSH, REC-1, REC-2, WARM, WILD, RARE, WET	3736	
				totals:	97109	104

Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Process Supply (PROC), Industria Service Supply (IND), Ground Water Recharge (GWR), Freshwater Replenishment (FRSH), Navigation (NAV),

Contact (REC-1) and Non-contact Recreation (REC-2), Commercial and Sport Fishing (COMM), Warm Freshwater Habitat (WARM), Cold Freshwater Habitat (COLD), Estuarine Habitat (EST), Wetland Habitat (WET), Marine Habitat (MAR), Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species Habitat (RARE), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction and/or Early Development (SPWN), Shellfish Harvesting (SHELL)

32. Channel reaches identified as District~~County~~ Reach numbers 11, 23, 30, 31, 59, 65, 68, 81, 83, 84, and 85 are not included in this WDR and shall be removed from the Approved Maintenance Plan. Any required maintenance in these channels will be permitted or certified separately. This is reflected in Table 1.

Under this WDR, ten (10) new reaches will be included and are reflected in Table 1 and added to the Approved Maintenance Plan, described below:

~~5)~~1) Reach 101 - Violin Canyon (PD 2312)
This reach is located east of Interstate 5 and west of Emerald Lane in the community of Castaic in unincorporated Los Angeles County. The reach is within the Castaic Creek Watershed. The upstream limit of the reach is 2,637 feet upstream of Lake Hughes Road and the downstream limit of the reach is 820 feet upstream of Lake Hughes Road. This reach is approximately 1,817 feet in length.

~~6)~~2) Reach 102 - Violin Canyon (PD 2275)
This reach is located south of West Highland Court, east of adjacent open space, north of Oak Valley Road, and west of Sierra Oak Trail and Interstate 5 in the community of Castaic in unincorporated Los Angeles County. The reach is located within the Castaic Creek Watershed. The reach upstream limit is 1,072 feet upstream of the downstream face of Sierra Oak Trail and the downstream limit is 94 feet upstream of the downstream face of Sierra Oak Trail. This reach is approximately 978 feet in length.

~~7)~~3) Reach 103 - PD 2225 **- Bouquet Canyon Channel** (File No. 04-162)
This channel reach was transferred from a private housing developer to the County for maintenance. The reach was previously approved for maintenance under File No. 04-162, and will now be included under this WDR.

~~8)~~4) Reach 104 - Castaic Creek (PD 2441 UNIT 2)
This reach is located in Castaic Creek between Hwy 126 and Hasley Canyon Road, and borders the length of Hancock Pkwy. (Parcel Map No. 17949) and the developer is Newhall Land and Farm. The County will maintain this channel from 669' upstream of Murfield Lane Centerline to 478' downstream of Turnberry Lane Centerline. To avoid impacts within the mitigation area and also provide flood control protection, the County will *only* perform hand clearing in two 20 by 20 foot areas, around the two existing outlets for a total of 800 square feet of impact. Clearing around the two outlets will allow

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for inspection of the drainage facilities and will ensure that no vegetation blocks the outlets during storms.

~~9~~)5) Reach 105 - San Francisquito Canyon Channel (PD 2456)

The original WDR included maintenance of the San Francisquito Canyon channel from 417 feet upstream of Decoro Drive to 416 feet downstream of Decoro Drive. This channel reach is part of the Natural River Management Plan (NRMP) for the Santa Clara River and its tributaries. In order to comply with the NRMP requirements, The County will only maintain areas 50 feet up and downstream of Decoro Bridge.

In addition, the County will perform the following maintenance activities within the length of the channel as approved under the NRMP requirements: periodic removal of woody vegetation from rip-rap to protect its structural integrity; periodic clearing of storm drain outlets to ensure proper drainage; periodic removal of ponded water that cause odor problems; as-needed repairs of bridges; as-needed repairs of bank protection; and as-needed clearing of vegetation from water quality filters and treatment basins.

~~10~~)6) Reach 106 - Castaic Drain Outlet (RIVID Channel)

This reach is located south of Ridge Route Road, west of Castaic Regional Sports Complex, north of Castaic Road and Tapia Canyon Road, east of Castaic Road and Interstate 5 in the community of Castaic in unincorporated Los Angeles County. The reach is located within the Santa Clara River Watershed. The reach upstream limit is at the toe of the grouted rip-rap apron and the downstream limit is 147 feet downstream of the grouted rip-rap apron. This reach is approximately 147 feet in length. The channel clearing will involve mechanized removal of vegetation along a 12 foot-wide access path aligned along the toe of the east bank, and installation and maintenance of crushed aggregate base on the access path. A

~~11~~)7) Reach 107 - The Old Road Channel (RM[D Channel)

This reach is located south of the intersection of Calgrove Boulevard and The Old Road, west of Interstate 5, east of The Old Road and Towsley Canyon Park in unincorporated Los Angeles County. The reach is located within the Santa Clara River Watershed. The reach upstream limit is 230 feet upstream of the driveway into 24136 The Old Road and the downstream limit is the upstream end of the concrete-lined channel. This reach is approximately 943 feet in length. Hand clearing of vegetation using manual and hand-operated tools will be performed at this reach. V

~~34.~~8) Reach 108 — Pico Canyon Creek (PD 2528) (File 05-205)

This channel reach was transferred from a developer to the County for maintenance. The reach, previously approved for maintenance under File No. 05-205, will now be included under this WDR.

~~35.~~9) Reach 109 - Santa Clara River - S. Bank W. of McBean Pkwy (MTD1510):

This reach is in the Santa Clara River Watershed. This reach has an upstream limit of 371' U/S McBean Pkwy centerline (Latitude: 34.424217; Longitude: 118.563767); and a

downstream limit of PD 1946 (Latitude: 34.424106, Longitude: 118.56255). The length is 371 linear feet.

10) Reach 110 - Hasley Canyon Channel (PD 2262)
This reach is in the Santa Clara River Watershed. This reach has an upstream limit of PD 2508 (Latitude: 34.451733, Longitude: 118.633603), and a downstream limit of Castaic Creek (Latitude 34.445553, Longitude 118.62425). The length is 3736 linear feet.

~~36.~~34. Unless modified by the results of the Feasibility Study~~Channel~~ in the channels reviewed prior to the 1997 El Nino storm season, clearing shall not exceed "1997/1998 storm season clearing level" conditions established by the Regional Board, CDFG, and ACOE prior to the 1997 El Nino storm season. This baseline level was utilized to identify the maximum vegetation removal authorized for each reach, and is included in the Maintenance Plan for Annual Clearing Activities, August 2005 (Maintenance Plan).

~~37.~~35. The District~~County~~ shall comply with the specifications of their Mitigation Monitoring Program, and the Maintenance Plan prepared for this project, or any subsequently approved plans that follow. Only revisions approved by the Regional Board Executive Officer, ~~and~~ CDFG, and COE shall be authorized for this project.

~~38.~~36. Clearing will be either through the use of heavy equipment, including trucks, bulldozers, dump trucks, and front-end loaders, along with other specialized equipment, or in areas where there are sensitive species and native vegetation, clearing shall take place by hand as specified in the approved Maintenance Plan in order to selectively avoid protected resources. Equipment will access the channels by existing access roads. A

Additional Activities Permitted

~~39.~~37. **Maintenance of All Existing Invert Access Ramps**
All existing channel invert access ramps shall be part of the approved annual maintenance for all earth-bottom channel facilities, including new reaches that have been added to the WDR. The invert access ramps, whether constructed with dirt, lined with concrete, or armored with riprap on the sides, are critical structures for access to earth- bottom channel reaches. V

Maintenance activities for these ramps shall include inspection, minor maintenance repairs, and storm damage repair and rehabilitation. Storm damage repair and rehabilitation includes restoring ramps that are damaged or washed out during a storm, back to pre-storm conditions.

38. **One-Time Mechanical Sediment & Vegetation Removal for ~~1~~ 2 Hand Clearing Channel Reaches**

~~40.~~

a) T~~T~~he approved Maintenance Plan now includes Reach 29 Las Virgenes Creek (PD T1684) MCI as a hand clearing only reach. A one-time mechanical sediment and

vegetation

clearing, which shall be performed outside of the nesting bird season, is authorized. - A recent fire in 2006 burned the open space conservancy area adjacent to the channel reach. The fire also burned some of the vegetation within the reach. In addition, the reach has not been maintained for several years. Overgrown trees, cattails, and non-native vegetation dominate the channel reach and have impacted the hydraulic capacity of the channel. The reach currently has ponded water.

Due to years of accumulated sediment and excessive growth of root balls, the hydraulic capacity of the channel has diminished. In addition, additional sediment is expected from mudflows from adjacent burned areas during a storm. Therefore, this channel reach requires sediment clearing using mechanical equipment. The mechanical equipment shall sit on top of the access road and reach into the channel and scoop out vegetation and approximately 3-5 feet of accumulated sediment and root balls. This is necessary to remove ponded water and to allow storm flows to flow freely during future storms. The District~~County~~ projects that approximately 462 tons of sediment and vegetation will be removed from this site and that it will take approximately 3 - 5 days to complete the sediment removal within a 370-foot section of the channel. If the expected scope changes, the Executive Officer shall be notified 21 days in advance of clearing activities.

b) Reach 33 – Medea Creek (PD T1378 u.2)

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This reach is located south of Laro Drive, northwest of Kanan Road in the City of Agoura Hills. The reach is within the Malibu Creek Watershed. The upstream limit of the reach is 731 feet upstream of Thousand Oaks Boulevard and the downstream limit is 215 feet downstream of Thousand Oaks Boulevard. This reach is approximately 946 feet in length.

~~41.~~39. **Notching Drain Channel Outlets at a 45-Degree Angle from the Outlet to the Middle of the Channel**

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Notching and limited vegetation removal from drain channel outlets shall be conducted on reaches where mechanical removal of sediment and vegetation is allowed, and is consistent with the original channel designs. In stream reaches that are approved for mowing or hand removal of vegetation, work on installing notches at 45-degrees and clearing drain channel outlets shall be conducted by hand and shall be consistent with all terms of the Maintenance Plan and WDR.

Work Plan Notification Protocol

~~42.~~40. Notification Protocol and Thresholds for Additional Review

The Discharger shall send an Annual Work Plan not later than ~~May~~ July1 each year to the Regional Board Executive Officer and 401 Certification Unit staff, and periodically send notices of additional routine maintenance work as the needs are discovered in the field.

The Executive Officer (EO) may require additional time to review ~~or add additional requirements~~ or require separate permitting for certain activities proposed upon review of the Annual Work Plan or notice of additional routine maintenance work; however, if the EO does not provide any comments, ~~additional requirements or a request for additional time~~ within 60 days of receipt for the Annual Work Plan, or ~~30~~ 15 days of receipt for the notice of additional routine maintenance work, the District~~County~~ is authorized to proceed pursuant to the Annual Work Plan or notice of additional routine maintenance work as proposed. However, if maintenance in a given reach is not prepared to be altered from that carried out in the previous year, the District is authorized to proceed with such maintenance without further approval from the EO.

Routine maintenance may require additional review if the work exceeds certain thresholds of impact, as noted below. For projects that exceed the following thresholds, the Discharger shall provide information similar to a pre-construction notification for a 401 Water Quality Certification for 60-day review.

Project Exceeds Original Footprint

For any work resulting in temporary or permanent impacts to vegetation within the ordinary high water mark outside the original project boundaries, the District~~County~~ shall submit a new proposed scope of work to the EO for confirmation that the project areas is within the scope of the WDR ~~and may be required by~~ The EO may require the District to reapply for a supplemental WDR~~s~~ with all pertinent information for consideration for such work.~~.~~

Project Deviates from the Pre-Approved Surface Water Diversion Plan

If water diversion is planned to occur in a manner which deviates from the Pre-Approved Water Diversion Plan, the District~~County~~ shall submit the new plan to the EO ~~Regional Board Executive Officer~~ and 401 Certification Unit staff for review and approval. The EO~~xecutive Officer~~ is authorized to approve changes to the Surface Water Diversion Plan provided that it is consistent with this WDR.

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For projects exceeding the thresholds above, and for which mitigation is required, ~~or triggering any of the BMPs requiring mitigation,~~ the District~~County~~ will propose mitigation measures to compensate for loss of waters of the U.S. and wetland functions and values. Mitigation ratios will be determined ~~on a case by case basis~~ as detailed below. Mitigation proposed by the District~~County~~ will require approval by the Executive Officer.

In addition, nothing in this WDR shall prohibit the District from conducting emergency maintenance of any reach in order to protect public safety or property, provided that notice is provided to the EO either prior to or as soon as possible following start of the emergency work.

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Best Management Practices

~~41.~~ All appropriate Best Management Practices (BMPs) shall be implemented in order to ~~avoid~~ minimize impacts ~~any impacts~~ to water quality. ~~The Project shall not result in indirect impacts to water quality or beneficial uses of downstream water bodies. The Project shall not result in changes in the quantity or quality of storm water downstream water bodies during maintenance, or during operation subsequent to the maintenance activities. The Project shall not result in changes in the quantity or quality of storm water discharge during periods between maintenance activities, or upon its completion.~~

~~42.~~41. **Feasibility Study (Pursuant to California Water Code 13267)**

~~43.~~42. The Regional Board requires the information to be provided in the F**easibility Study to determine that the channel clearing acti**vities have avoided, minimized or appropriately

mitigated for effects on the beneficial uses of the affected reaches or to require changes to channel clearing activities to achieve the necessary avoidance, minimization or mitigation. Data and technical ability necessary to conduct the required analyses exits with the District~~County~~. The required analyses have been split over multiple years to allow the District~~County~~ flexibility in completing the required studies.

43. As part of the on-going assessment of channel conditions and hydraulic capacity, the District~~County~~ shall perform a study of the hydraulic capacity and existing conditions of all reaches covered by this WDR to determine where a potential may exist for native vegetation to remain within the soft-bottom portion of the channel (Feasibility Study). ~~In addition, any channels which may potentially provide restoration opportunities for riparian habitat/vegetation growth shall be identified based on these assessments and a consideration of restoration plans by other agencies.~~ The District~~County~~ shall implement the Feasibility Study process with a schedule of one or more watersheds per year to be analyzed, with completion of all watersheds/studies within six (6) years.

44. In the first year, the Feasibility Study shall be required for the reaches covered by this WDR is the Los Angeles River Watershed (which includes the mainstem reaches and all tributaries, ~~including~~ except Compton Creek, covered by this WDR). The study area shall include any channels directly or indirectly affected by proposed maintenance. Each year, the District~~County~~ and the EO~~Regional Board Executive Officer~~ shall mutually determine in which watershed(s) the Feasibility Study shall be conducted in the subsequent year.

45. For each watershed, the Feasibility Study shall include ~~(but not be limited to)~~ the following components: A

a. Study Workplan
b. Technical Assessment Report
c. Recommendations

46. **Study Workplans**

Within 6 months of WDR issuance, a Workplan for the first watershed shall be submitted to the EO~~Regional Board Executive Officer~~ for approval. The plan will include: a detailed plan for a ~~hydrological~~ hydraulic analysis of each earth-bottom segment in relation to the conveyance capacity of the upstream and downstream channels. The hydraulic ~~hydrological~~ analysis shall include, but not be limited to, the height and density of vegetation in the earthen channel bottom and its effect on the conveyance capacity of flood flow in the channel. ~~as well as a consideration of changes in expected stream flow in response to requirements of the Los Angeles County Municipal Separate Storm Sewer (MS4) NPDES Permit, Standard Urban Stormwater Mitigation Plans (SUSMPs), Total Maximum Daily Loads (TMDLs) and other pertinent local plans including, but not limited to the Integrated Regional Water Management Plan (IRWMP) (including implementation of, and plans for, increased stormwater infiltration), the City of Los Angeles' Integrated Resources Plan, the relevant watershed master plan and the County's Drought Management Plan. Several reasonable~~ Manning's n will ~~should~~ be used in the hydrological analysis to evaluate the representative height of the channel for flood control V

and natural habitat purposes in the sole judgment of the District and should be in accordance with "Guide for Selecting Manning's Roughness Coefficients for Natural Channels and Flood Plains," United States Geological Survey Water-supply Paper 2339 or other appropriate guidance.

~~The assessment of biological functions and values of these reaches should be made such that comparisons of habitat type, maturity and extent of native or invasive plants can be made between reaches.~~

47. Water Quality Monitoring

The objectives of the water quality monitoring are to assess BMP effectiveness and to ensure that water quality is not impacted as a result of the proposed maintenance activities. As part of the Feasibility Study, water quality assessments within each reach will be required on a one-time basis before, after, and during maintenance clearing activities. The testing parameters required will be the same as for Surface Water Diversion.

- pH
- temperature
- dissolved oxygen
- turbidity

~~50.~~• total suspended solids (TSS)

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Downstream TSS shall be maintained at ambient levels. Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases shall not exceed 20%. Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%.

Analyses must be performed using approved US Environmental Protection Agency methods, where applicable. These constituents shall be measured at least once prior to diversion and then monitored for on a daily basis during the first week of diversion and/or dewatering activities, and then on a weekly basis, thereafter, until the in-stream work is complete.

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These constituents shall be measured at least once prior to the maintenance activity and then monitored for on a daily basis during the first week of maintenance activities, and then on a weekly basis, thereafter, until the work is complete. When reaches are within the watershed designated for a Feasibility Study in a particular year, water quality

monitoring should be conducted for those reaches as part of the Feasibility Study and reported with the Technical Assessment Report.

48. **Technical Assessment Report — ~~Hydrologic, Water Quality and Geomorphologic Assessment~~**

Within 6 months of Workplan approval, a Technical Assessment Report shall be submitted and will include a reach-by-reach list of all the reaches included in the subject watershed with a ~~hydrologic~~ hydraulic analysis of each reach.

This report will also include an assessment of the biological functions and values for each reach which may include previous biological surveys and assessments. ~~and an assessment of water quality as required.~~ For each reach, the report shall address capacity requirements for flood control; design criteria and anticipated limitations; and an analysis either of potential areas where vegetation may remain or areas where additional vegetation is required to be removed to maintain the flood control capacity of the channel. ~~and areas with the potential for restoration of native vegetation.~~ For those areas where vegetation may remain, the technical assessment report should ~~specify~~ set forth generally the amount(s) and type(s) of native vegetation that could remain in the channel.

49. **Recommendations**

Within 6 months of Workplan approval, recommendations shall be submitted to the EO ~~Regional Board Executive Officer~~ and shall include options for reaches where native vegetation may be allowed to remain or where ~~native~~ vegetation ~~could be re-established.~~ must be removed. Recommendations shall also include suggested schedules of vegetation removal frequency in order to ensure the maximum habitat preservation, consistent with necessary flood control, is achieved. ~~For recommendations approved by the Executive Officer, the County shall make the necessary changes to the Maintenance Plan, including proposals for additional BMPs as may be appropriate, and shall submit such changes to the Executive Officer 21 days prior to any clearing activities.~~ If additional vegetation is required to be removed, such removal shall not be subject to the EO's approval. Changes shall be made to the Maintenance Plan consistent with the recommendations and the Maintenance Plan. Any proposed modifications shall be submitted to the EO, the CDFG, and the COE. The Modified Maintenance Plan shall be used for all channel clearances scheduled after its approval by the agencies.

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Regulatory Authority

~~51.~~50. The Regional Board has determined to regulate the subject discharge of fill materials into waters of the State by issuance of waste discharge requirements (WDRs) pursuant to CWC Section 13263 ~~of the California Water Code (CWC)~~. The Regional Board considers WDRs necessary to adequately address impacts and mitigation to beneficial uses of waters of the State from this Project, to meet the objectives of the California Wetlands Conservation Policy (Executive Order W-59-93), and to accommodate and require appropriate changes over the life of the Project.

~~52.~~51. The Regional Board, on June 13, 1994, adopted, in accordance with Section 13240 et seq. of the CWC, a revised Water Quality Control Plan, Los Angeles Region (Basin Plan). This updated and consolidated revised Basin Plan was approved by the State Water Resources Control Board and the Office of Administrative Law on November 17, 1994, and February 23, 1995, respectively. A summary of regulatory provisions is contained in 23 CCR 3912. The Basin Plan defines beneficial uses and water quality objectives for waters of the State,

including surface waters and ground waters. This Order is in compliance with the Basin Plan, and amendments thereto.

52. The goals of the California Wetlands Conservation Policy (Executive Order W-59-93, signed August 23, 1993) include ensuring "no overall loss" and achieving a "...long-term net gain in the quantity, quality, and permanence of wetland acreage and values..." Senate Concurrent Resolution No. 28 states that lilt is the intent of the legislature to preserve, protect, restore, and enhance California's wetlands and the multiple resources which depend on them for benefit of the people of the State." Section 13142.5 of the CWC requires that the "[h]ighest priority shall be given to improving or eliminating discharges that adversely affect...wetlands, estuaries, and other biologically sensitive areas."

53. The California Environmental Quality Act (CEQA) requires all Projects approved by State agencies to be in full compliance with CEQA, and requires a lead agency to prepare an appropriate environmental document (e.g., Environmental Impact Report or Negative Declaration) for such Projects. The Regional Board finds that the proposed activities are categorically exempt pursuant to Section 15301(d) (Existing Facilities) of the California Environmental Quality Act (CEQA)

54. This Project is filed with the Regional Board under file number 99-011, 2009 WDR.

55. The Regional Board has notified the District~~Los Angeles County Department of Public Works~~ and other interested agencies and persons of its intent to prescribe WDRs for this discharge.

56. A tentative WDR was released for public comment on October 12, 2009. Written comments were accepted until 5:00 p.m. on November ~~12~~ 25, 2009.

57. The Regional Board, in a public meeting on February 2010 ~~December 10, 2009,~~ heard and considered all comments pertaining to the discharge.

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Prohibitions

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1. Fueling, lubrication, maintenance, operation, and storage of vehicles and equipment shall not result in a discharge or a threatened discharge to waters of the State. At no time shall the District~~County~~ use any vehicle or equipment which leaks any substance that may impact water quality. Staging and storage areas for vehicles and equipment shall be located outside of waters of the State.

2. No construction material, spoils, debris, or any other substances associated with this project that may adversely impact water quality standards, shall be located in a manner which may result in a discharge or a threatened discharge to waters of the State. Designated spoil and waste areas shall be visually marked prior to any excavation and/or construction activity, and storage of the materials shall be confined to these areas.

3. The discharge shall not: a) degrade surface water communities and populations including vertebrate, invertebrate, and plant species; b) promote the breeding of mosquitoes, gnats, black flies, midges, or other pests; c) alter the color, create visual contrast with the natural appearance, nor cause aesthetically undesirable discoloration of the receiving waters; d) cause formation of sludge deposits; or e) adversely affect any designated beneficial uses.

Provisions

4. If not previously submitted, t~~T~~he District~~County~~ shall submit to this Regional Board 401 Certification Unit staff copies of any other final permits and agreements required for this project, including, but not limited to, the ~~U.S. Army Corps of Engineers' (~~ACOE~~)~~ Section 404 Permit and the ~~California Department of Fish and Game's (~~CDFG's~~)~~ Streambed Alteration Agreement. These documents shall be submitted prior to any discharge to waters of the State.

5. The District~~County~~ will comply with the specifications of their Mitigation Monitoring Program, and the Maintenance Plan as revised in August 2005, or any subsequently approved plans that follow.

6. Prior to any maintenance activities within the subject reaches, the District~~County~~ shall develop and publish watershed maps which indicate areas of maintenance (impact acreages and types of vegetation impacted) and approximate schedules for surveys and ~~(including baseline biological surveys, post-surveys and~~ maintenance activity descriptions). This information shall be made publicly available on the County's Department of Public Works internet website ~~and be noticed to watershed councils and other interested parties~~ prior to any routine maintenance activities. For each reach, the information shall include: (a) the proposed schedule; (b) a description of the reach's existing condition; (c) the area of proposed ~~impact~~ maintenance; and (d) a description of any existing aquatic resources (e.g., wetland/riparian vegetation based on readily available information and pre-clearing biological surveys). After submission to the EO~~Regional Board Executive Officer~~, the District~~County~~ will post the Annual Project and Mitigation Monitoring Reports as required.

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7. The Applicant shall develop and implement a Plan for Hazard Analysis and Critical Control Points (HACCP). This plan may be developed with Regional Board 401 Certification Unit staff assistance in order to implement prevention and control of aquatic nuisance species. The draft plan shall be submitted to the Regional Board 401 Certification Unit staff within two months after issuance of this WDR. Further information regarding the development of the HACCP can be found at: http://www.anstaskforce.gov/haccp.php.

~~8. The County shall comply with all water quality objectives, prohibitions, and policies set forth in the *Water Quality Control Plan, Los Angeles Region (1994),* as amended.~~

9. The District~~County~~ shall implement all applicable Best Management Practices as outlined in the Maintenance Plan, including, but not limited to, the following:

   Prior to start of any annual maintenance clearing, qualified biologists shall perform pre-clearing biological resource surveys and photo documentation including sensitive/endangered species focused surveys on specific reaches. No work shall commence without confirmation of findings or no findings of sensitive/endangered species from the biologists. These surveys are also meant to minimize impact on any resources that may potentially use or benefit from the channel.

   During construction, biologists shall be available for consultation for any issues that may arise.

10. The District~~County~~ and all contractors employed by the District~~County~~ shall have copies of this WDR, the approved Maintenance Plan, and all other regulatory approvals for this project on site at all times and shall be familiar with all conditions set forth therein.

~~11. All excavation, construction, or maintenance activities shall follow best management practices to minimize impacts to water quality and beneficial uses. Dust control activities shall be conducted in such a manner that will not produce downstream runoff.~~

~~12.~~11. All waste and/or dredged material removed shall be relocated to a legal point of disposal if applicable. A legal point of disposal is defined as one for which Waste Discharge Requirements have been established by a California Regional Water Quality Control Board, and is in full compliance therewith. Please contact the Land Disposal Unit, at (213) 620-6600 for further information.

~~13. The County shall implement all necessary control measures to prevent the degradation of water quality from the proposed project in order to maintain compliance with the Basin Plan. The discharge shall meet all effluent limitations and toxic and effluent standards established to comply with the applicable water quality standards and other appropriate requirements, including the provisions of Sections 301, 302, 303, 306, and 307 of the Clean Water Act. This WDR does not authorize the discharge by the County for any other activity than specifically described in the current 404 Permit for this project.~~

~~14.~~12. The Applicant shall allow the Regional Board and its authorized representative entry to the premises, including all mitigation sites, to inspect and undertake any activity to determine compliance with this WDR, or as otherwise authorized by the California Water Code.

~~15.~~13. Application of pesticides must be supervised by a certified applicator and be in conformance with manufacturer's specifications for use. Compounds used must be appropriate to the target species and habitat. Pesticide utilization shall be in accordance with State Water Resources Control Board Water Quality Order Nos. 2004-0008-DWQ and 2004-0009-DWQ.

16. The Applicant shall not conduct any routine maintenance activities within waters of the State during a rainfall event. The Applicant shall maintain **a one-day (1-day) clear weather forecast** before conducting any operations within waters of the State. If rain is predicted within 12 hours after operations have begun, activities shall cease temporarily, and protective measures to prevent siltation/erosion shall be implemented and maintained.

~~17. Any routine maintenance activities will be phased to limit the exposed or working face such that the graded area can be stabilized within 96 hours after the first prediction of rain during the 5-day forecast or within 24 hours after final grading of the phased area.~~

~~18.~~ The Applicant shall utilize the services of a qualified biologist with expertise in riparian assessments during all construction activities where clearing involves areas to be partially cleared (i.e. some vegetation is to remain in the same reach or in an adjacent reach). The biologist shall be available ~~on site~~ during construction activities ~~to ensure that all protected areas are marked properly and ensure that no vegetation outside the specified areas is removed.~~ The biologist shall have the authority to stop the work, as necessary, if instructions are not followed. The biologist shall be available upon request from ~~this~~ Regional Board staff for consultation. ~~within 24 hours of request of consultation.~~

19. No activities shall involve wet excavations (i.e., no excavations shall occur below the seasonal high water table). A minimum **5-foot** buffer zone shall be maintained above the existing groundwater level. If construction or groundwater dewatering is proposed or anticipated, the County shall file a **Report of Waste Discharge** to this Regional Board and obtain any necessary NPDES permits/Waste Discharge Requirements prior to discharging waste. Sufficient time should be allowed to obtain any such permits (generally 180 days). If groundwater is encountered without the benefit of appropriate permits, the District~~County~~ shall cease all activities in the areas where groundwater is present, file a Report of Waste Discharge to this Regional Board, and obtain any necessary permits prior to discharging waste.

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20. **All m**aintenance activities not included in this WDR, and which may require a permit, must be reported to the Regional Board for appropriate permitting. Bank stabilization **and grading, as well as** any other ground disturbances, are subject to restoration and revegetation requirements, and may require additional WDR action.

21. Maintenance activities in the Santa Clara River area shall comply with the provisions of the Natural Rivers Management Plan (NRMP). The following provisions apply to soft- bottom channel reaches that are within the jurisdiction of the approved NRMP: a) Periodic clearing of vegetation immediately upstream and downstream of certain existing bridges which were not designed in accordance with the NRMP; b) Periodic removal of woody vegetation from riprap to protect its structural integrity; c) Periodic clearing of storm drain outlets to ensure proper drainage; d) Periodic removal of ponded water that cause odor problems; e) As needed repairs of bridges; f) As-needed repairs of bank

protection; and g) As needed clearing of vegetation from water quality filters and treatment basins

22. All surface waters, including ponded waters, shall be diverted away from areas undergoing grading, construction, excavation, vegetation removal, and/or any other activity which may result in a discharge to the receiving water. If surface water diversions are anticipated, the District~~County~~ shall develop and submit a Surface Water Diversion Plan (plan) to the Executive Officer. The plan shall include the proposed method and duration of diversion activities, structure configuration, construction materials, equipment, erosion and sediment controls, and a map or drawing indicating the locations of diversion and discharge points. Contingency measures shall be a part of this plan to address various flow discharge rates. The plan shall be submitted prior to any surface water diversions. If surface flows are diverted~~present~~, then upstream and downstream monitoring for the following shall be implemented:

~~24.~~• pH
~~25.~~• temperature
~~26.~~• dissolved oxygen
~~27.~~• turbidity
~~28.~~• total suspended solids (TSS)

Downstream TSS shall be maintained at ambient levels. Where natural turbidity is between 0 and 50 Nephelometric Turbidity Units (NTU), increases shall not exceed 20%. Where natural turbidity is greater than 50 NTU, increases shall not exceed 10%. A

Analyses must be performed using approved US Environmental Protection Agency methods, where applicable. These constituents shall be measured at least once prior to diversion and then monitored for on a daily basis during the first week of diversion and/or dewatering activities, and then on a weekly basis, thereafter, until the in-stream work is complete.

The District~~County~~ shall submit results of the analyses to the Regional Board, to the attention of the 401 Program Unit, within 30 days of the date the sample was taken. ~~by the 15th day of each subsequent sampling month.~~ A map or drawing indicating the locations of sampling points shall be included with each submittal. Diversion activities shall not result in the degradation of beneficial uses or exceedance of water quality objectives of the receiving waters. Any such violations may result in corrective and/or enforcement actions, including increased monitoring and sample collection. V

23. ~~The County shall restore all areas of TEMPORARY IMPACTS to waters of the United States and all other areas of temporary disturbance outside of areas of maintenance which could result in a discharge or a threatened discharge to waters of the State. Restoration shall include returning areas to pre-project contours and planting with native vegetation, if feasible. Restored areas shall be monitored and maintained with native species as~~

~~necessary for five years.~~ The District~~County~~ shall implement all necessary Best Management Practices to control erosion and runoff from areas associated with this project.

~~29.~~24. Prior to clearing of the new reaches, or where additional removal is required in existing reaches, the District~~County~~ will document and provide to the Regional Board the amount of riparian vegetation to be removed for maintenance in these reaches and will provide mitigation for each reach whose mechanical removal is required, consistent with this WDR.

~~30.~~25. The District~~County~~ shall provide ~~COMPENSATORY MITIGATION~~ mitigation for the new impacts at a ~~minimum~~ ratio of 1.3:1~~2:1~~. If ongoing maintenance activities were covered by previous certifications, additional mitigation will not be required. Also, if the Feasibility Study results permit additional areas of existing reaches to retain native vegetation beyond that allowed in a previous Maintenance Plan, such additional areas shall offset the requirement for compensatory mitigation at a 1:1 ratio. Also, no additional mitigation shall be required for reaches as to which mitigation was previously required prior to their transfer to the District.

~~31.~~26. The District~~County~~ shall submit a Mitigation Plan for approval to this EO~~Regional Board Executive Officer~~ and 401 Certification Unit staff. ~~for the new permanent impacts at least 60 days prior scheduling clearing to allow for the review and approval of the Mitigation Plan.~~ The Mitigation Plan will specify location, methods, monitoring, performance criteria, reporting and any other pertinent information. The EO~~Regional Board Executive Officer~~ will approve the plan or ~~,~~ require changes and re-submission, ~~or will make modifications to the plan,~~ as appropriate to achieve the no-net-loss policy of Executive Order W-59-93

~~32.~~27. Mitigation shall take place in the vicinity of the impacted reach, or if not feasible, within the same watershed. If the District can demonstrate that there are no mitigation areas in the same watershed, mitigation can occur in a different watershed.

~~33.~~28. All mitigation areas shall be preserved and maintained as habitat in perpetuity.

~~34.~~29. Pursuant to California Water Code section 13267, the County shall submit to this EO~~Regional Board Executive Officer~~ and 401 Certification Unit staff an **Annual Project and Mitigation Monitoring Report (Annual Report)** by **May 1st** of each year for each year the WDR is in effect.

~~35.~~30. The first Annual Report shall be due on April 1, 2011 and shall describe in detail all of the project/maintenance activities performed during the previous year and all restoration and mitigation efforts; including percent survival by plant species and percent cover. The Annual Reports shall describe the status of other agreements (e.g., mitigation banking) or any delays in the mitigation process. At a minimum the Annual Reports shall include the following documentation:

~~e)~~a) Color photo documentation of the immediately pre- and post-project and

V

mitigation site conditions as well as periodic photo documentation of post-project and mitigation site conditions between project activities;

~~d)~~b) Narrative and photo documentation of any BMP installations during project maintenance activities and immediately after maintenance activities as well as periodically between maintenance activities, if applicable to the BMP. In addition, an evaluation of the effectiveness of BMPs utilized shall be provided based on field observations and any water quality monitoring data required.

~~m)~~c) Photo documentation of any vegetation left within maintenance areas immediately following maintenance clearing (including acreage);

~~n) Documentation of volumes of vegetation removed from the project areas;~~

~~o) Documentation of volumes of trash removed from the project areas;~~

~~p) Documentation of volumes of sediment removed from the project areas;~~

~~q)~~d) Geographical Positioning System (GPS) coordinates in decimal-degrees format outlining the boundary of the project and mitigation areas;

~~r)~~e) The overall status of project including a detailed schedule of work;

~~s)~~f) Copies of all revised permits related to this project.

~~t)~~g) Water quality monitoring results for each reach (as required). ~~compiled in an easy to interpret format.~~

~~u)~~h) A certified Statement of "no net loss" of wetlands associated with this project;

1) Discussion of any monitoring activities and exotic plant control efforts; and

~~31.~~m) Description of all outreach activities in the previous year.; ~~and~~

~~32. A certified Statement from the County that all conditions of this WDR have been met.~~

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~~33. Pursuant to California Water Code section 13267, the County shall submit an **Annual Workplan** with a schedule of the upcoming reaches proposed for cleanout within 60 days of WDR issuance and annually thereafter. The Annual Workplan shall include information such as: (a) proposed schedule; (b) acreage of areas to be impacted (vegetated and non-vegetated); (c) a description of any existing aquatic resources; and (d) proposed application of pesticides.~~

V

~~34.~~31. All applications, reports, or information submitted to the Regional Board shall be signed by either a principal executive officer, ranking elected official, or other duly authorized employee.

~~35.~~32. Each and any report submitted in accordance with this WDR shall contain the following completed declaration;

"I declare under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who managed the system or those directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Executed on the_____ day of _____ at _____

_____ (Signature)

_____ (Title)"

34. All communications regarding this project and submitted to this Regional Board shall identify the Project File Number **99-011 2009 WDR.** Submittals shall be sent to the EO~~xecutive Officer~~ where identified and to the 401 Certification Unit, Attention: Valerie Carrillo.

35. Any modifications of the proposed project may require submittal of a new Clean Water Act Section 401 Water Quality certification application or WDR application and appropriate filing fee.

36. Coverage under this WDR may be transferred to the extent the underlying federal permit may legally be transferred and further provided that the County notifies the ~~Executive~~ EO~~Officer~~ at least 30 days before the proposed transfer date, and the notice includes a written agreement between the existing and new party containing a specific date of coverage, responsibility for compliance with this WDR, and liability between them.

Enforcement:

37. The District~~County~~ or their agents shall report any noncompliance. Any such information shall be provided verbally to the EO~~xecutive Officer~~ within 24 hours from the time the District~~County~~ becomes aware of the circumstances. A written submission shall also be provided within five days of the time the District~~County~~ becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected; the anticipated time it is expected to continue and steps taken or planned to reduce, eliminate and prevent recurrence of the noncompliance. The EO~~xecutive Officer~~, or an authorized representative, may waive the written report on a case-by-case basis if the oral report has been received within 24 hours.

(a) In the event of any violation or threatened violation of the conditions of this WDR, the violation or threatened violation shall be subject to any remedies, penalties, process or sanctions as provided for under State law.

~~a.~~(b) In response to a suspected violation of any condition of this WDR, the State Water Resources Control Board (State Board) or Regional ~~Water Quality Control~~ Board may require the holder of any permit or license subject to this WDR to furnish, under penalty of perjury, any technical or monitoring reports the State Board or Regional Board deems appropriate, provided that the burden, including costs, of the reports shall be a reasonable relationship to the need for the reports and the benefits to be obtained from the reports.

~~(b) In response to any violation of the conditions of this WDR, the State Board or Regional Board may add to or modify the conditions of this WDR as appropriate to ensure compliance.~~

38. After notice and opportunity for a hearing, this Order may ~~be terminated or~~ modified for cause, including, but not limited to:

~~b.~~a. Violation of any term or condition contained in this Order;

~~c.~~b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;

~~d.~~c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized reuse;

~~a)~~d. Endangerment to public health or environment that can only be regulated to acceptable levels by Order modification. ~~or termination.~~

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39. ~~Additional Reports: The Dischargers shall furnish, within a reasonable period of time, any information the Regional Board may request to determine whether or not cause exists for modifying, revoking and reissuing, or terminating this Order. The Dischargers shall also furnish to the Regional Board, upon request, copies of records required to be kept by this Order.~~

V

40. Discharge a Privilege: All discharges of waste into the waters of the State are privileges, not rights. In accordance with Water Code section 13263(g), these requirements shall not create a vested right to continue to discharge and are subject to ~~rescission or~~ modification.

41. Term: This Order shall remain in effect for a period of 5 years. Should ~~the~~ the District ~~County~~ wish to continue maintenance activities for a period of time in excess of 5 years, the District~~County~~ must file a Report of Waste Discharge with the Regional Board no later than 140 days in advance of the 5th-year anniversary date of the Order for consideration of issuance of new or revised requirements. Any discharge of waste five years after the date of adoption of this Order, without filing a Report of Waste Discharge with this Regional Board, is a violation of Water Code section 13264. The Regional Board is authorized to take

appropriate enforcement action for any noncompliance with this provision including assessment of penalties.

I, Tracy J. Egoscue, Executive Officer, do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, Los Angeles Region, on December 10, 2009.

Ordered by: _____

Tracy J. Egoscue
Executive Officer

TENTATIVE

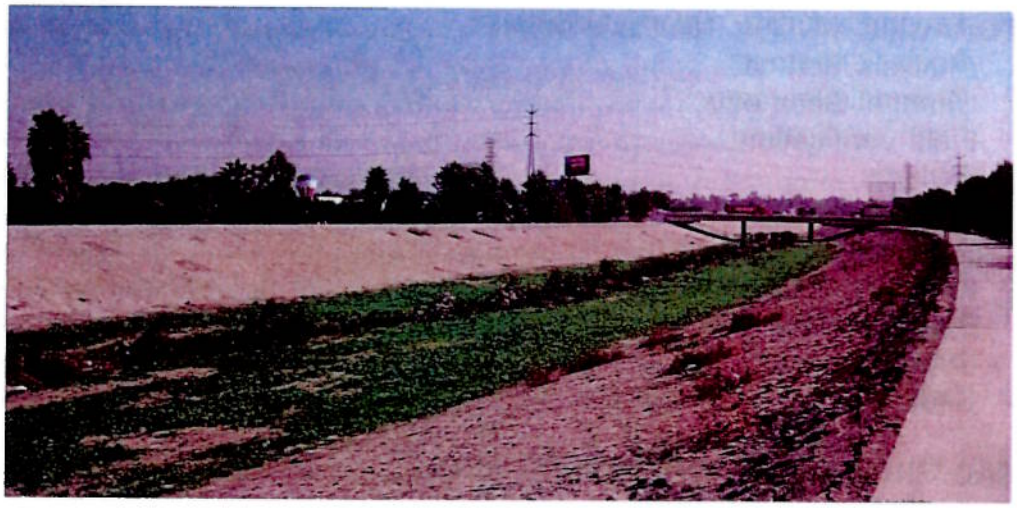
ATTACHMENT A

Compton Creek Levee Certification Hydraulic Report

County of Los Angeles Flood Control District

Comments on
Tentative Waste Discharge Requirements
Maintenance Clearing of Engineered Earth-Bottom Flood Control Channels, Los Angeles County (File No. 99-011)

Compton Creek
Levee Certification
Hydraulic Report



Prepared by:

County of Los Angeles
Department of Public Works
Water Resources Division, Hydrology Section

Revised September 2009

Table of Contents

1 INTRODUCTION

1.1 Purpose

The purpose of this report is to

1) present the hydraulic analysis for the reach of Compton Creek from the Artesia Freeway (91) to its confluence with the Los Angeles River per the PAL agreement.

   and

2) determine whether this reach of Compton Creek conforms to the freeboard requirements of Title 44 of the Code of Federal Regulations (CFR), Part 65, Section 10 for levee systems.

The Federal Emergency Management Agency's (FEMA) policy requires that levee systems provide a minimum of three feet of freeboard above the water surface level of the base flood. An additional one foot above the minimum is required within 100 feet in either side of structures such as bridges or wherever the flow is constricted. An additional one-half foot above the minimum at the upstream end of the levee, tapering to not less than the minimum at the downstream end of the levee, is also required (Reference 1).

1.2 Background

The County of Los Angeles Department of Public Works started the levee certification process in July 2007, to determine whether the county-owned levees provided standard flood protection for a magnitude storm with a one percent chance of occurring during any year. FEMA requires the completion of the certification process by October 2009.

Compton Creek is a tributary of the Los Angeles River and is located 13 miles from downtown Los Angeles, north of the 405 freeway, and runs northwest to southeast under both the Artesia (91) and Long Beach (710) freeways (see Plate 1). Approximately 26,400 acres (41.2 square miles) drain into Compton Creek Channel. The channel runs through highly urbanized areas of the City of Compton, Rancho Dominguez (unincorporated), the City of Carson, and the City of Long Beach (Reference 2).

The pertinent reach of Compton Creek was constructed in 1937 by the U.S. Army Corps of Engineers (Corps). The segment requiring certification consists of a trapezoidal shape channel with earthen

embankments and natural bottom. The embankments have grouted stone side slopes. Compton Creek was constructed in segments over a period of several years. The entire channel was completed in 1951. Responsibility for operation and maintenance was transferred to the Los Angeles County Flood Control District the same year. For typical cross-section plots of the channel, please refer to Appendix A.

2 HYDRAULIC MODEL DEVELOPMENT

2.1 Analysis Method

The Corps' HEC-RAS 4.0 computer program was used to perform the hydraulic analysis. In applying the numerical model, the flow was assumed to be in a one-dimensional, non-uniform, steady state.

2.2 Channel Geometry

A field survey was conducted and used to develop the HEC-RAS model geometry. Cross-sections were defined at major channel geometry changes (i.e. channel shape, transitions, invert slope changes, etc) and near bridges. Cross-sections were also defined at regularly spaced intervals along the channel to improve model stability and produce a gradually varied flow profile. The vertical datum used for the HEC-RAS model was North American Vertical Datum (NAVD) 1988. The HEC-RAS model is georeferenced to California State Plane, NAD 83, Zone 5.

2.3 Field Verification

Site visits were conducted to verify and obtain bridge and pier information, and photograph the study area. A summary set of the pictures taken during those site visits are presented in Appendix B. Bridge and pier data are presented in Appendix C.

2.4 Bridges

Five (5) bridges are located within the modeled reach of Compton Creek (See Plate 2). All five bridges serve motor vehicles and one, the Alameda Street bridge, also serves the South Pacific Railroad.

Bridge information was gathered from the field survey and three separate site investigations. Bridge dimensions, locations along the channel, pier information, and minimum bridge soffit elevations are summarized in Appendix C.

2.4.1 Bridge Modeling Approach

The bridge modeling approach selected the highest energy solution between the Energy Only (Standard Step), Momentum, and Yarnell (Class A only) computation methods.

2.4.2 Bridge Soffit Elevations

The minimum bridge soffit elevations were determined by a field survey crew team and referenced to NAVD 1988 datum.

2.5 Discharges

The 100-year frequency flow rate of 16,500 cfs was modeled for the entire reach of Compton Creek. The flow rate was obtained from the Corps' Los Angeles County Drainage Area (LACDA), Final Feasibility Interim Report (Reference 3).

2.6 Boundary Conditions

A steady state analysis was performed under a mixed flow regime setting, therefore reach boundary conditions were set for both upstream and downstream as critical depth and a starting water surface elevation of 51.37 ft (NAVD), respectively. The starting water surface elevation for Compton Creek, at its confluence with the Los Angeles River, is based on Los Angeles River's 100-yr flood. The elevation was obtained from a flood insurance study report for Los Angeles River prepared by WEST Consultants (Reference 4).

2.7 Roughness Coefficients

A Manning's roughness coefficient of 0.025 was selected for the entire reach of Compton Creek to represent the grouted stone side slopes and a natural invert. This is consistent with the Corps' LACDA study design memorandum for Compton Creek improvements (Reference 2). The natural bottom invert is regularly maintained by the County of Los Angeles Department of Public Works to prevent the overgrowth of vegetation.

2.8 Coefficients of Contraction & Expansion

As recommended in the HEC-RAS Reference Manual (Reference 5), the coefficients of contraction and expansion were set to the default values of 0.1 and 0.3 for gradual transitions along the channel.

Near bridges, the coefficients of contraction and expansion were set as 0.3 and 0.5, respectively.

2.9 Superelevation

Superelevation of the water surface can result from channel bends and were included in the analysis of freeboard. The reach of Compton Creek studied included four locations with horizontal curves in the channel alignment.

Superelevation was computed as (Reference 6):

$$\Delta y = C\left(\frac{V^2 W}{g\, r}\right)$$

Where:

Δy	=	superelevation, the rise in water surface between a theoretical level at the centerline and the outside water surface
C	=	coefficient (tranquil flow = 0.5, rapid flow = 1.0)
V	=	mean channel velocity
W	=	channel width at elevation of centerline water surface
g	=	acceleration of gravity
r	=	radius of channel centerline curvature

The superelevation was computed for each cross-section within the horizontal curves and the highest value was applied to all cross-sections within the respective curve. Downstream of the curve, superelevation values were gradually transitioned back to normal at a rate of 0.1 ft per 100 ft.

A summary of the superelevation calculations can be found in Appendix D.

2.10 Sedimentation

Sedimentation was not studied in this report. Channel scour will need to be analyzed in future studies.

3 ANALYSIS RESULTS AND CONCLUSION

The computed HEC-RAS water surface profile for the 100-yr frequency flow rate of 16,500 cfs is shown on Plate 3. In reviewing the HEC-RAS output, the flow regime in the channel is subcritical with downstream control at the Los Angeles River. Channel overtopping occurs upstream of the Alameda Street and South Pacific Railroad bridge location. The length of the reach that overtops is approximately 630 ft. The water surface elevation also exceeds the bottom soffit elevation for two of the bridges, Del Amo Boulevard and Santa Fe Avenue.

The results also indicate that, with the exception of approximately 579 feet of channel downstream of the Long Beach Freeway (710), this reach of Compton Creek does not meet the minimum freeboard criteria as defined by FEMA. This includes taking superelevation into account. Coincidently, the segment that does meet freeboard criteria is the segment improved under the LACDA project by the construction of parapet walls. Table 1 below summarizes the levee segments by station whose heights need to be raised to meet the minimum freeboard criteria. The complete freeboard evaluation results are included in Appendix D.

Table 1: Levee Height Deficit

Channel Station	Max Levee Height Deficit (ft)
79+27 to 85+06	None
85+06 to 205+22.45	5.8

In conclusion, based on the results of this hydraulic analysis, the Compton Creek levees can not be certified due to insufficient freeboard. The HEC-RAS output is presented in Appendix E and the computer files are available in Appendix F.

4 REFERENCES

1. Federal Emergency Management Agency, 44 CFR, Chapter 1, Part 65.10 of the *Code of Federal Regulations.*

2. U.S. Army Corps of Engineers, Los Angeles District, 1993. *Design Memorandum for Compton Creek Improvements, Artesia Freeway to Los Angeles River.*

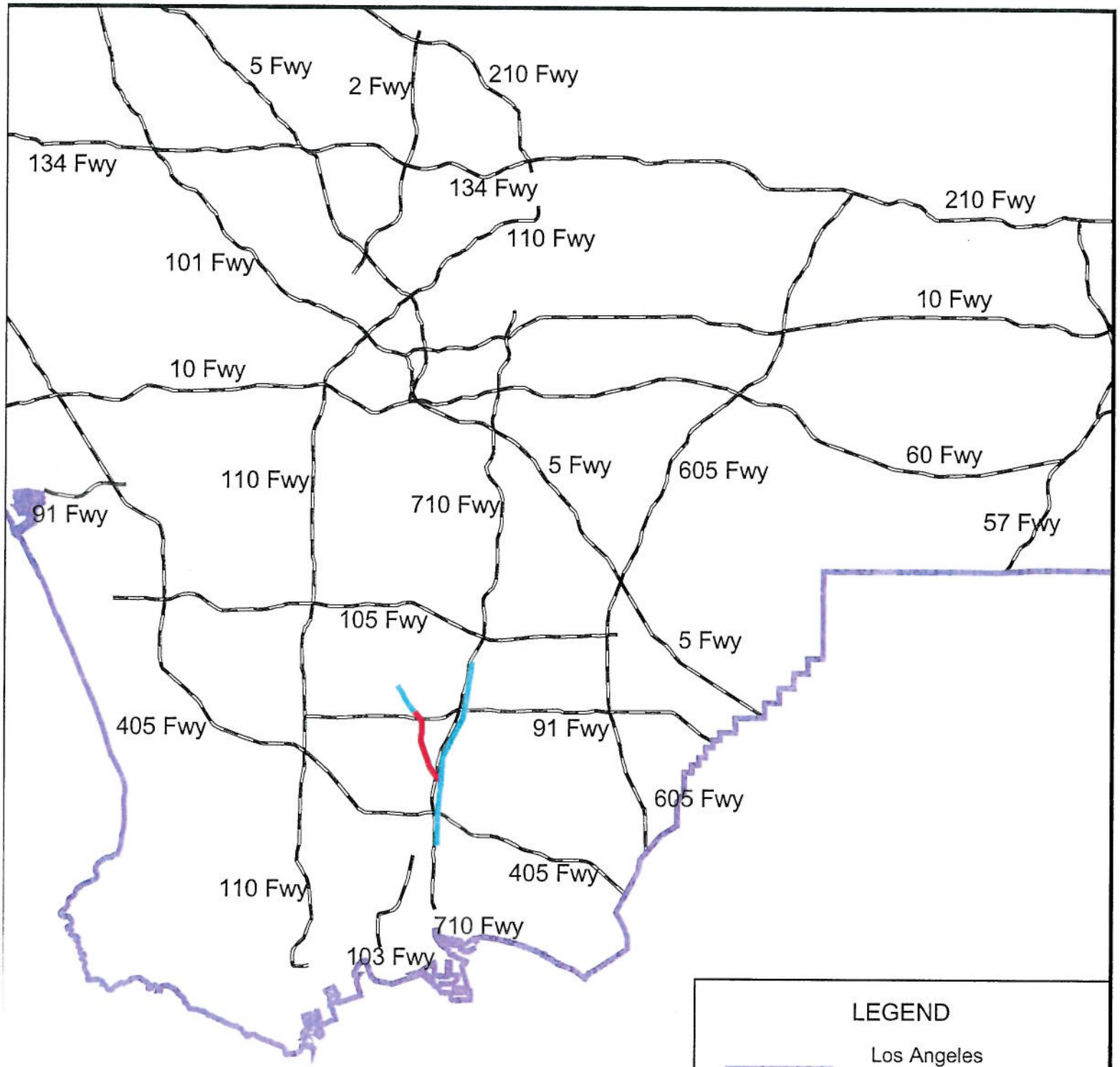
3. U.S. Army Corps of Engineers, Los Angeles District, 1991. *Los Angeles County Drainage Area Final Feasibility Interim Report, Part 1 Hydrology Technical Report, Base Conditions.*

4. WEST Consultants, Inc., 1999, *Flood Insurance Map Revision Report, Los Angeles River, Pacific Ocean to Long Beach Boulevard, Channel Analysis Report.*

5. U.S. Army Corps of Engineers, Hydrologic Engineering Center, 2008. *HEC-RAS River Analysis System, Hydraulic Reference Manual, version 4.0.*

6. U.S. Army Corps of Engineers, Engineering and Design, 1991. *Engineering Manual EM 1110-2-1601, Hydraulic Design of Flood Control Channels.*

PLATES



LEGEND

- Los Angeles County Boundary
- Compton Creek
- other channels
- Freeway

N

20000 0 20000 Feet

PREPARED BY LTT	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS
DATE 07/09/09	COMPTON CREEK LEVEE CERTIFICATION (Location in Los Angeles County)
SCALE 1" = 20,000'	

Plate 1

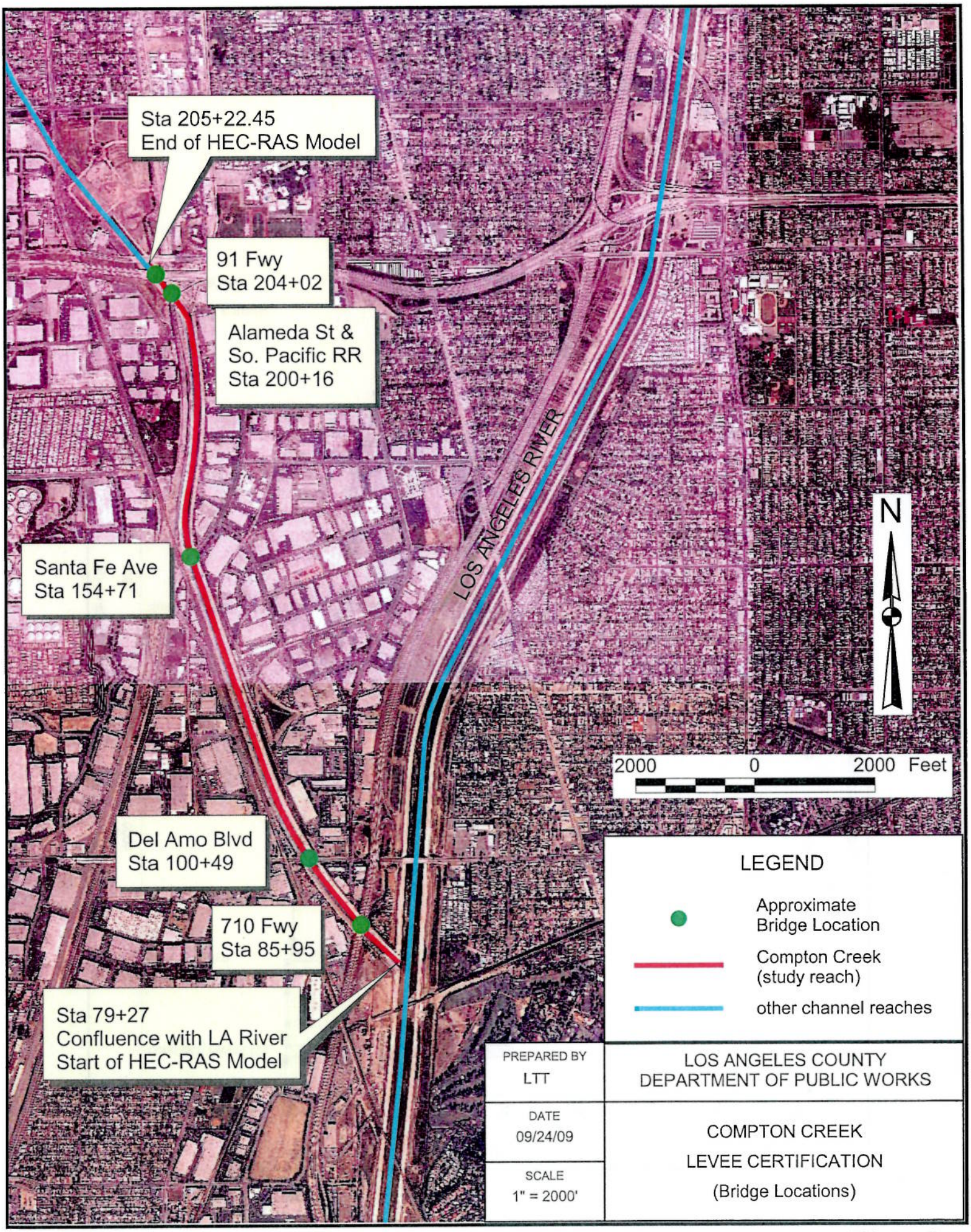

Sta 205+22.45
End of HEC-RAS Model
91 Fwy
Sta 204+02
Alameda St &
So. Pacific RR
Sta 200+16
LOS ANGELES RIVER
Santa Fe Ave
Sta 154+71
Del Amo Blvd
Sta 100+49
710 Fwy
Sta 85+95
Sta 79+27
Confluence with LA River
Start of HEC-RAS Model
N
2000 0 2000 Feet
LEGEND
Approximate
Bridge Location
Compton Creek
(study reach)
other channel reaches
PREPARED BY
LTT
LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
DATE
09/24/09
COMPTON CREEK
LEVEE CERTIFICATION
(Bridge Locations)
SCALE
1" = 2000'

Plate 2

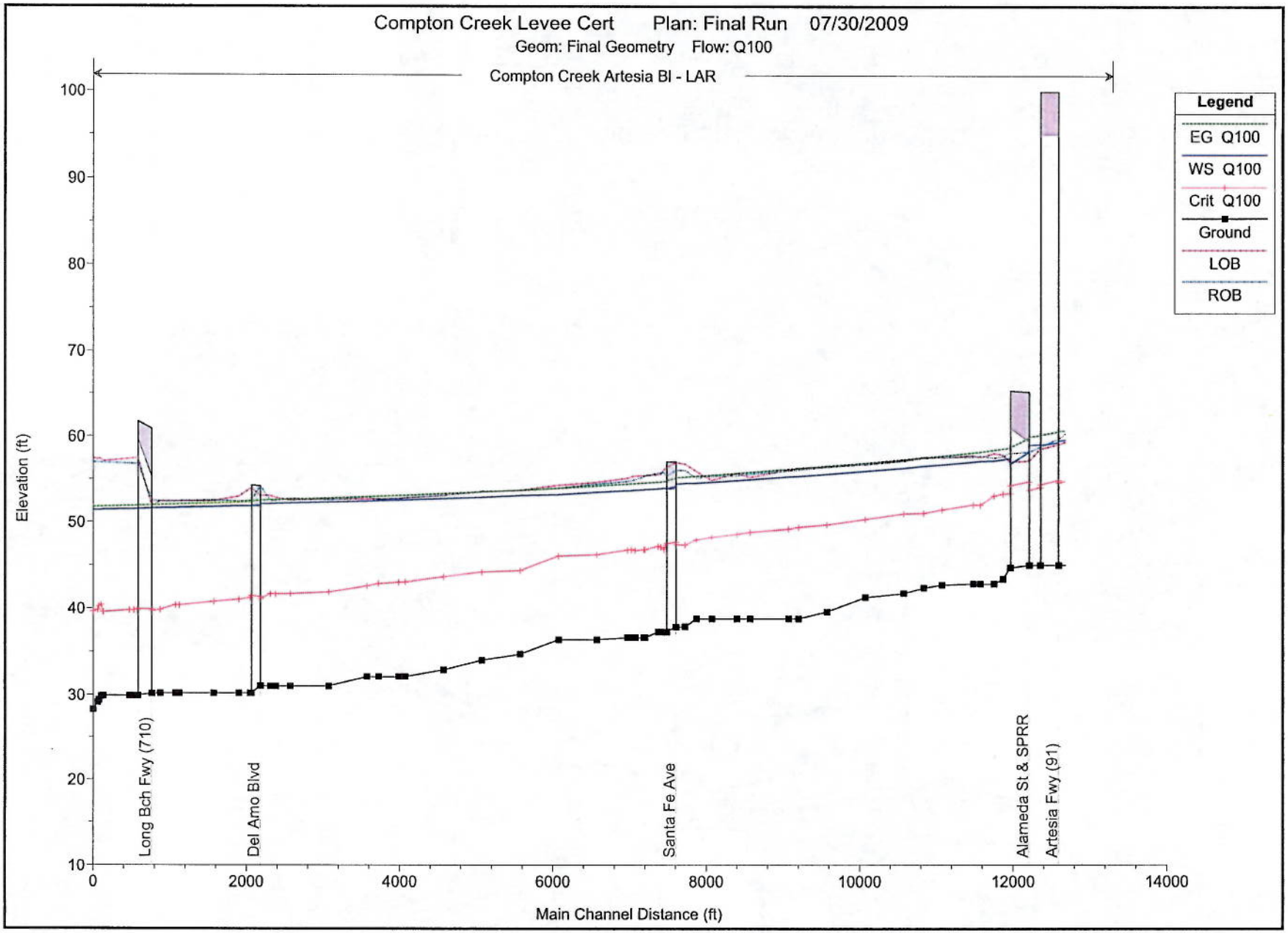
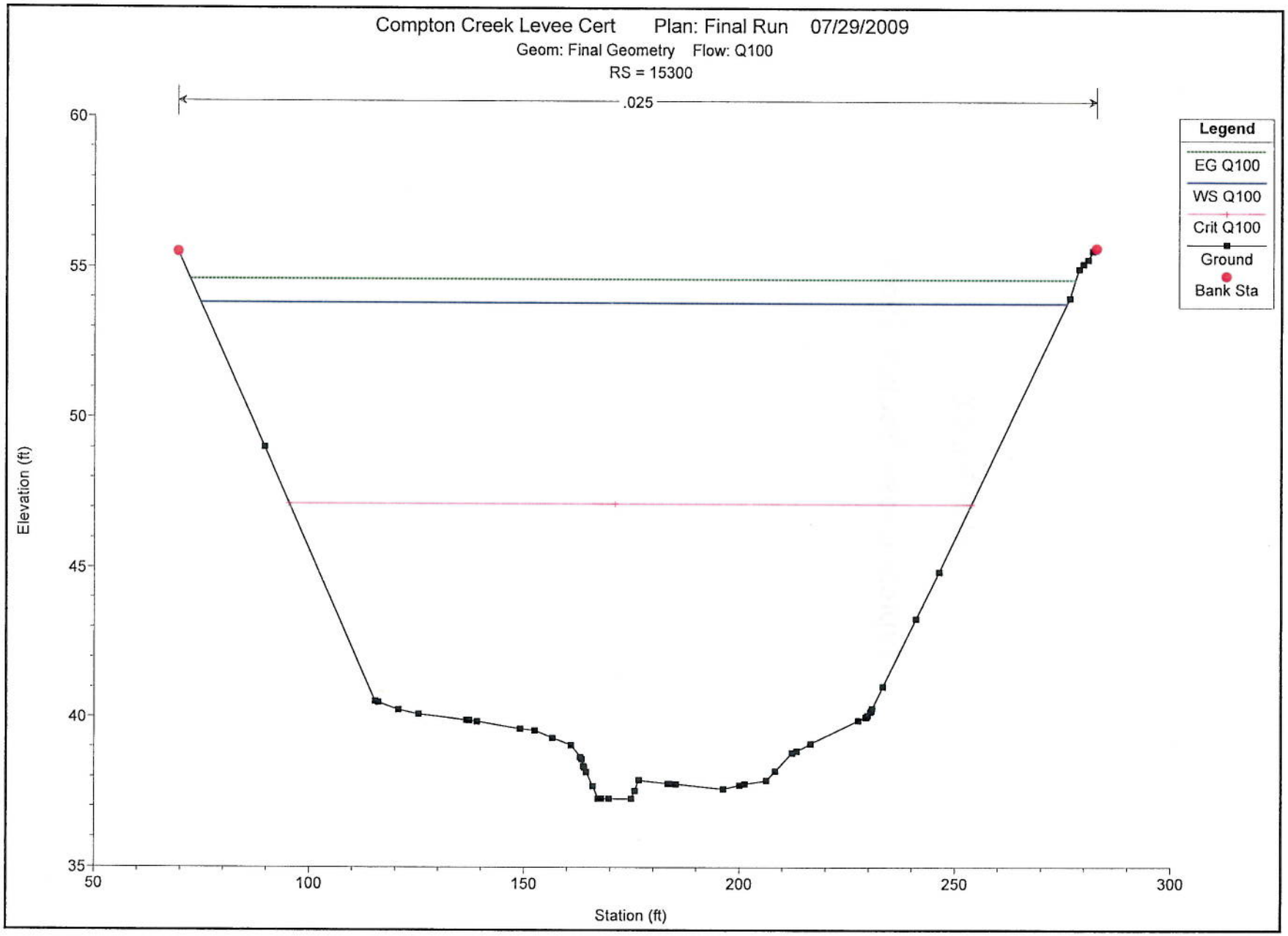

Compton Creek Levee Cert Plan: Final Run 07/30/2009
Geom: Final Geometry Flow: Q100
Compton Creek Artesia Bl - LAR
Legend
EG Q100
WS Q100
Crit Q100
Ground
LOB
ROB
Elevation (ft)
100
90
80
70
60
50
40
30
20
10
0
2000
4000
6000
8000
10000
12000
14000
Main Channel Distance (ft)
Long Bch Fwy (710)
Del Amo Blvd
Santa Fe Ave
Alameda St & SPRR
Artesia Fwy (91)

PLATE 3

APPENDIX A

Typical Cross-Section Plots


Compton Creek Levee Cert Plan: Final Run 07/29/2009
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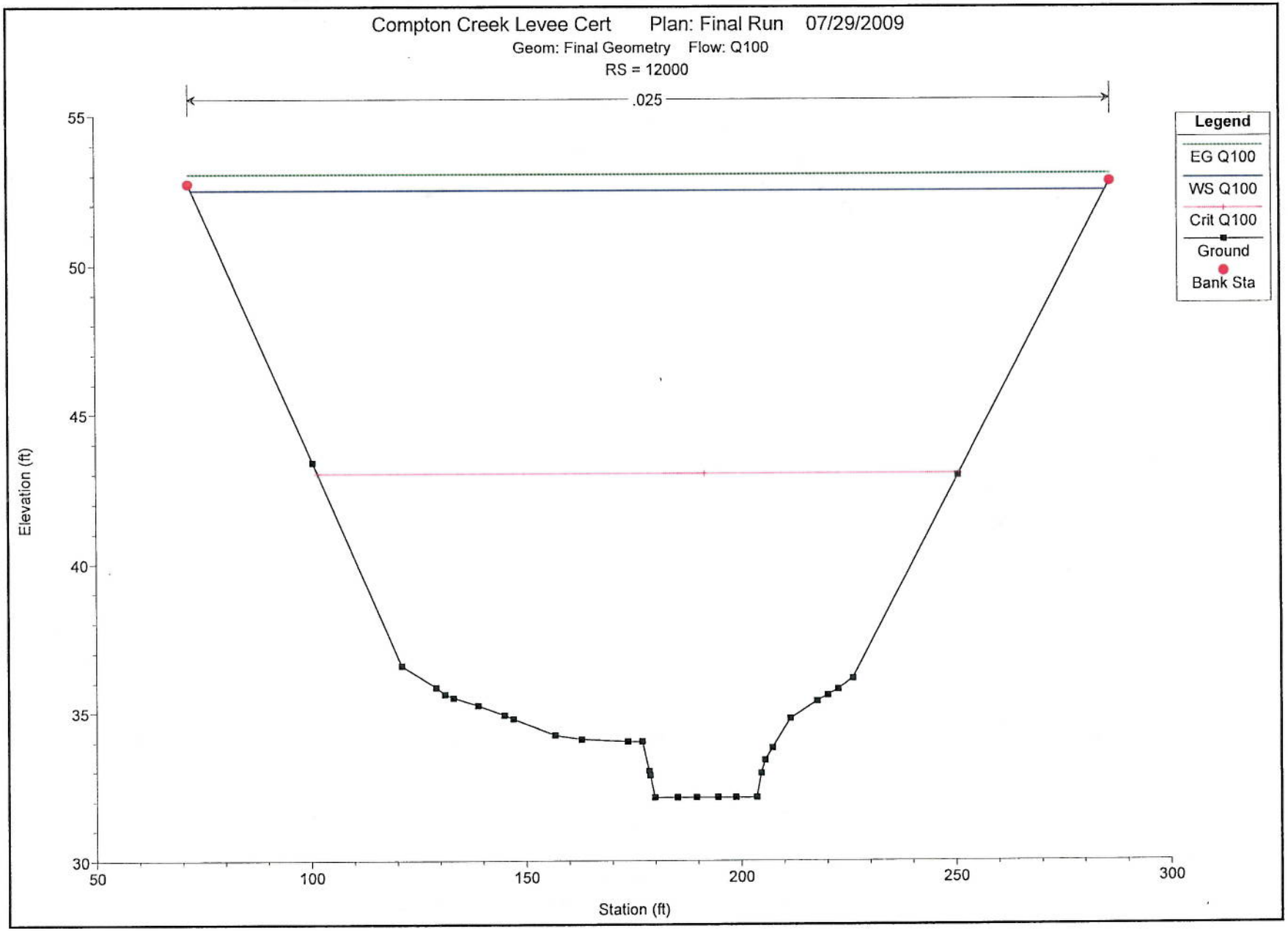
.025
Legend
EG Q100
WS Q100
Crit Q100
Ground
Bank Sta
Elevation (ft)
Station (ft)
60
55
50
45
40
35
50
100
150
200
250
300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.025
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EG Q100
WS Q100
Crit Q100
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Bank Sta
Elevation (ft)
Station (ft)
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250
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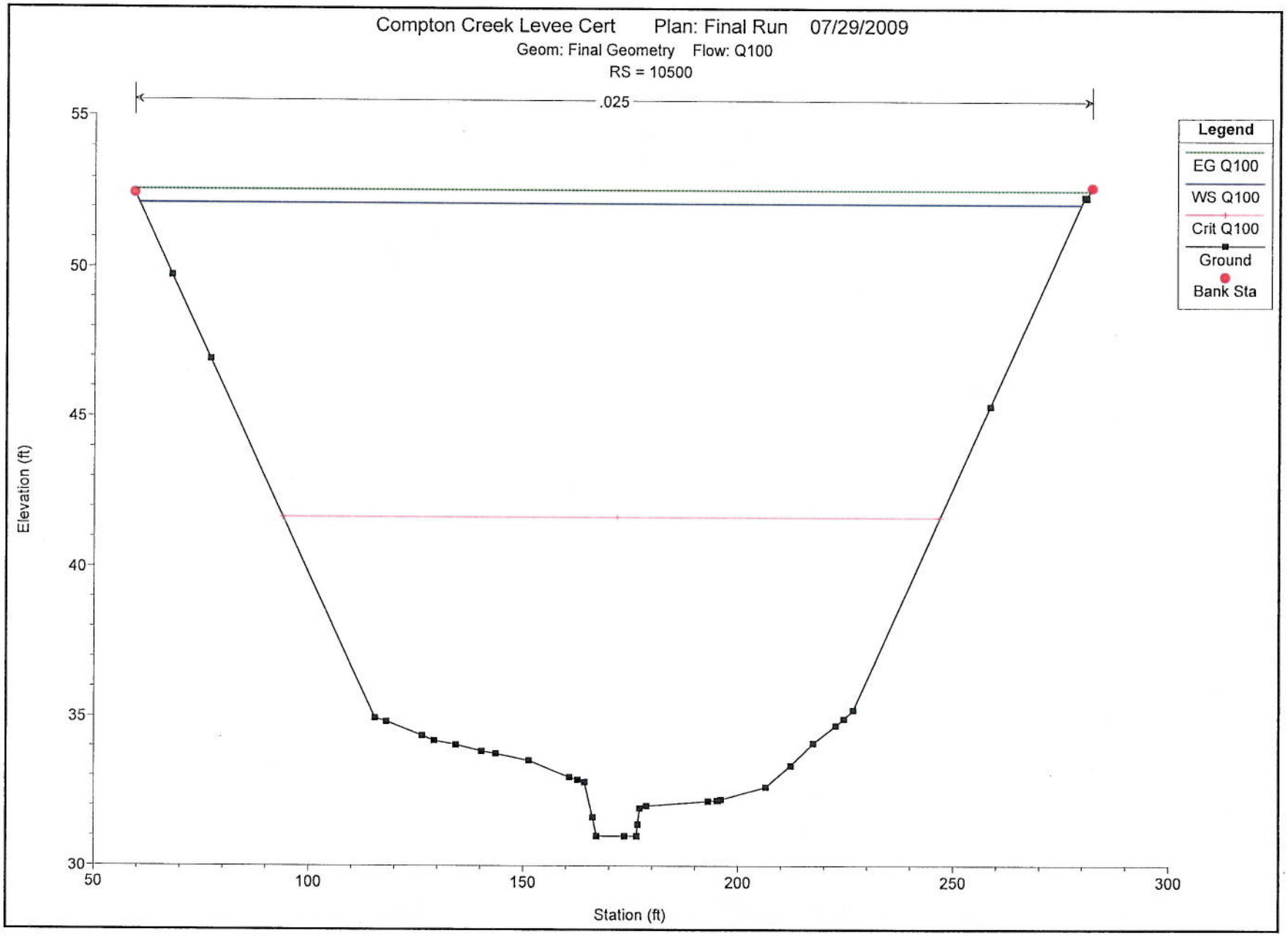
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EG Q100
WS Q100
Crit Q100
Ground
Bank Sta
Elevation (ft)
Station (ft)
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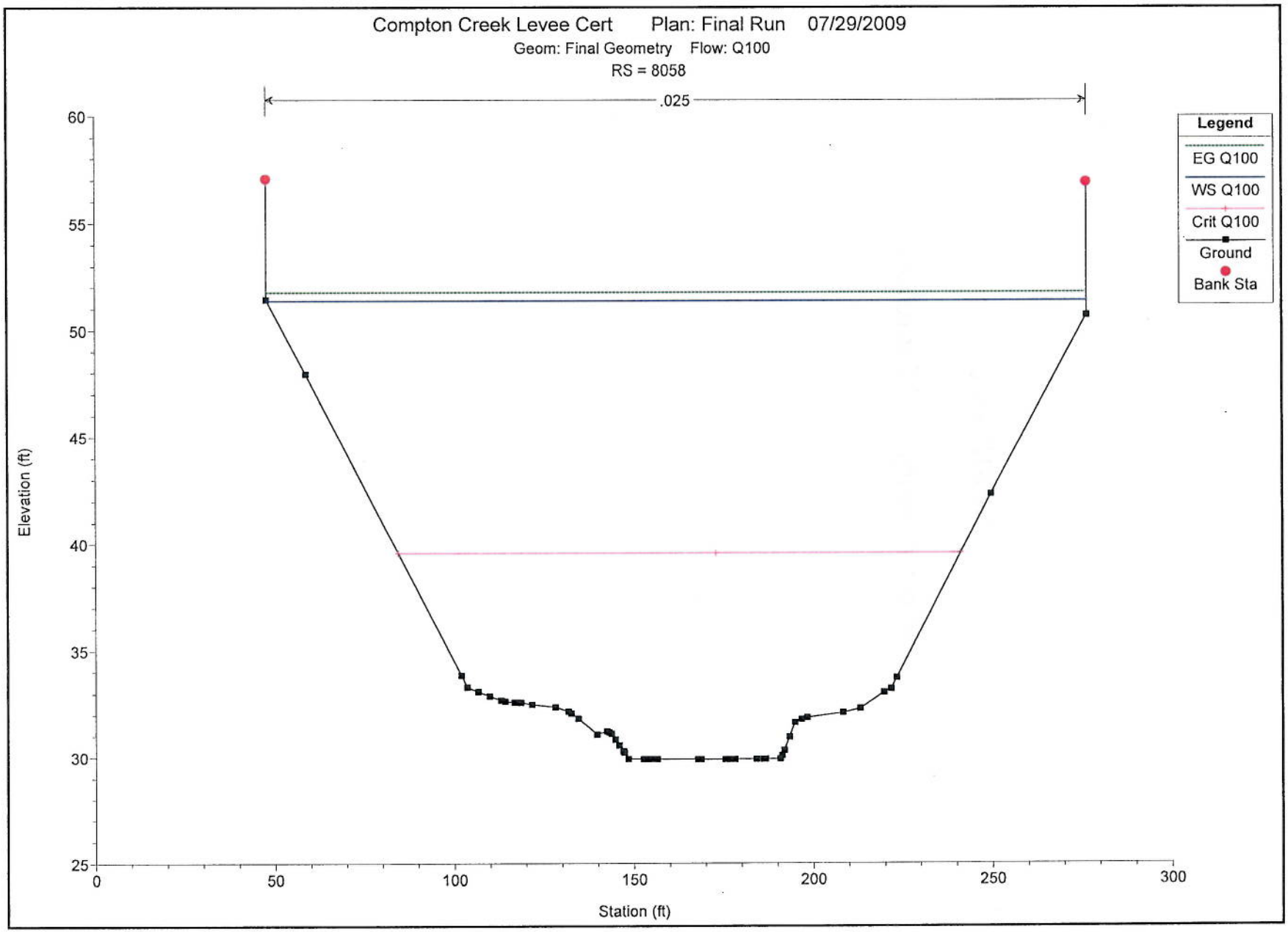
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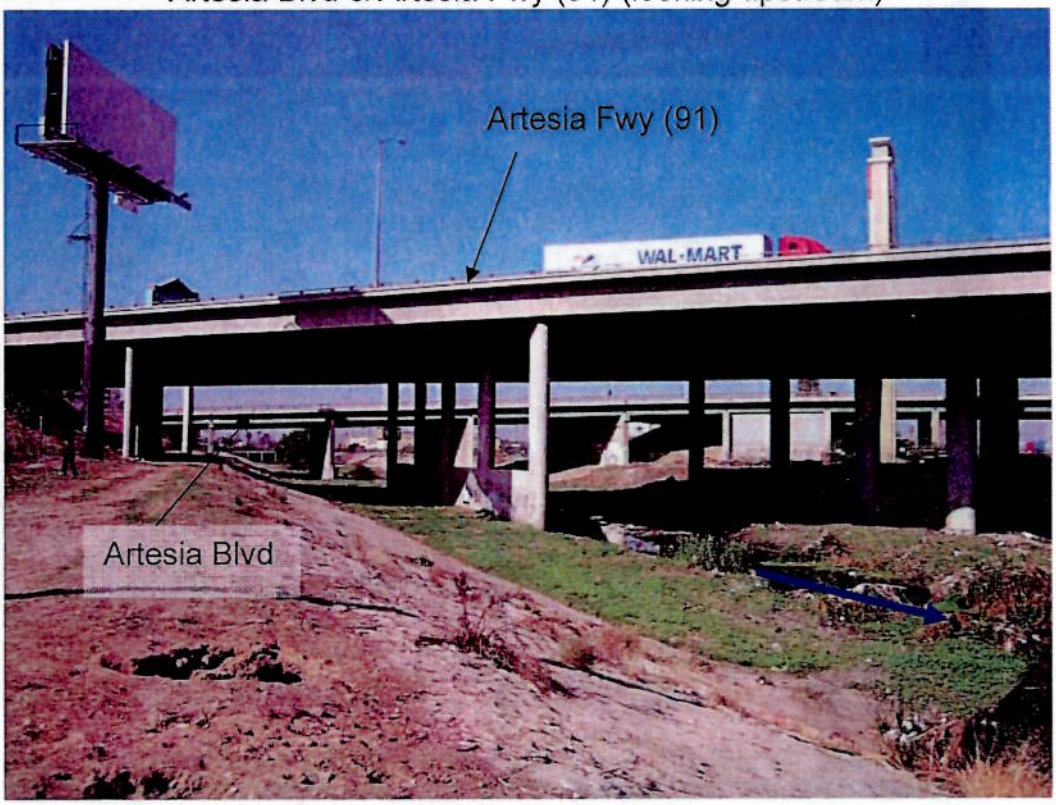
RS = 8058
.025
Legend
EG Q100
WS Q100
Crit Q100
Ground
Bank Sta
Elevation (ft)
Station (ft)
60
55
50
45
40
35
30
25
0
50
100
150
200
250
300

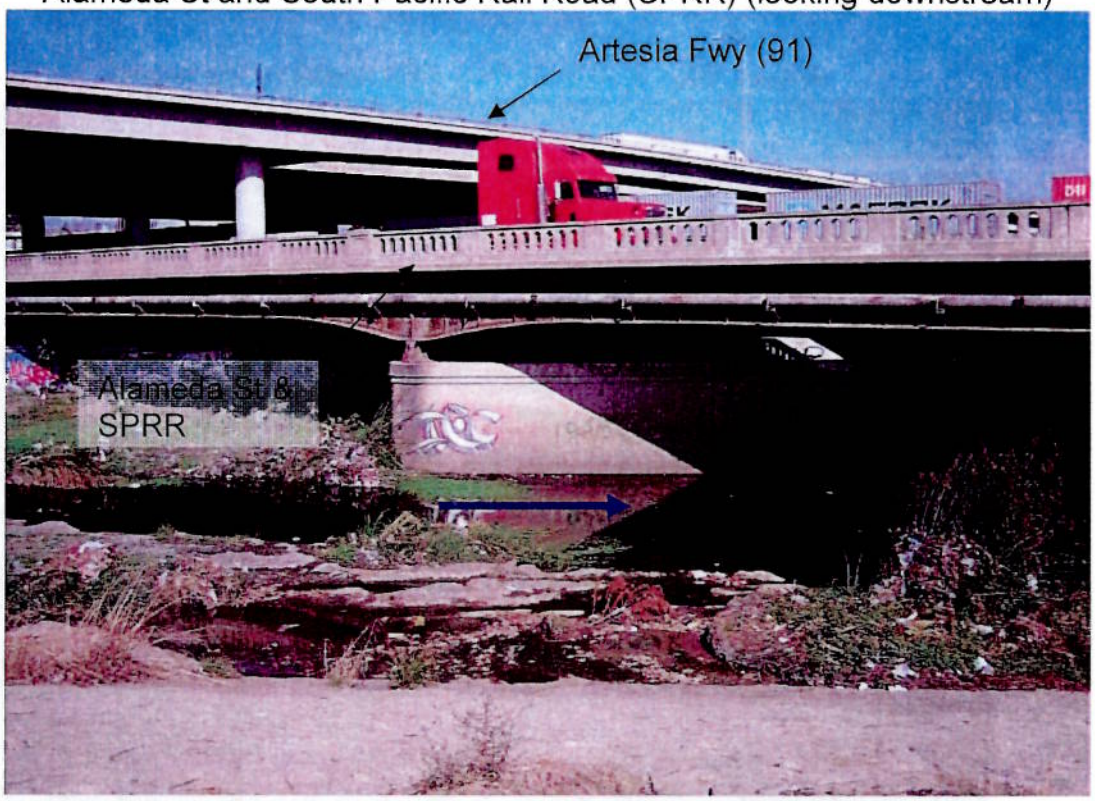
APPENDIX B

Field Investigation Pictures

Artesia Blvd & Artesia Fwy (91) (looking upstream)



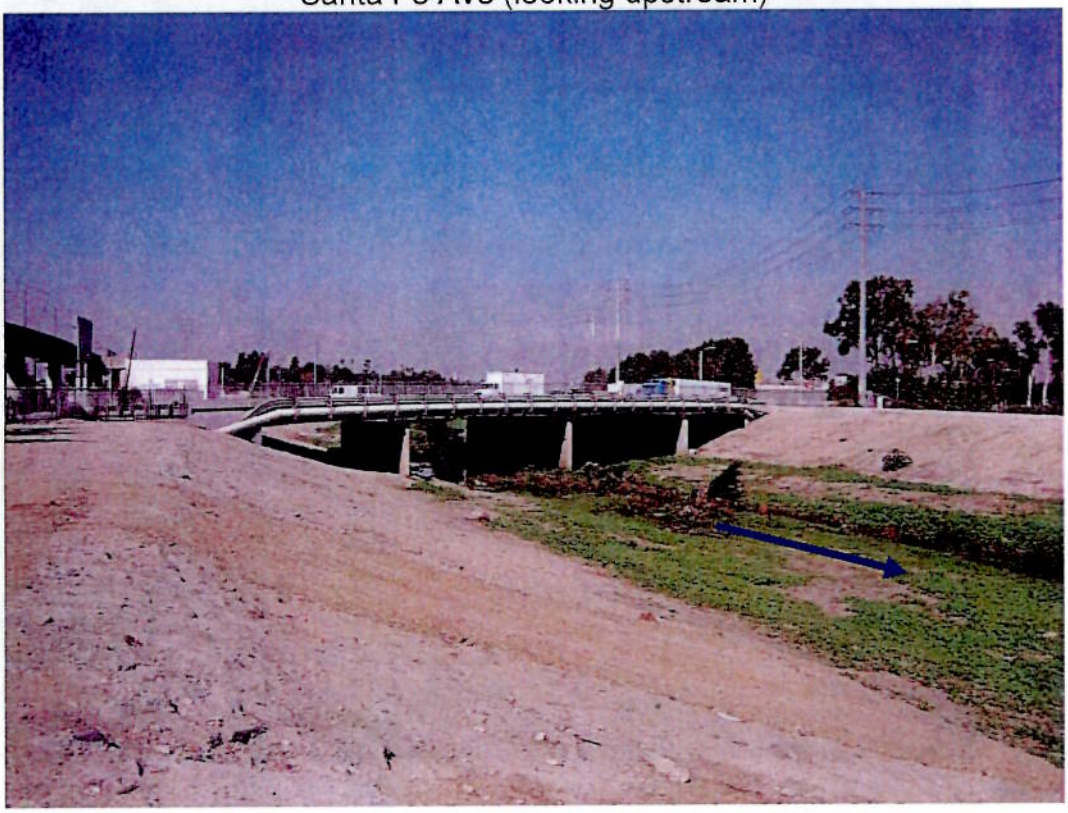
Alameda St and South Pacific Rail Road (SPRR) (looking downstream)



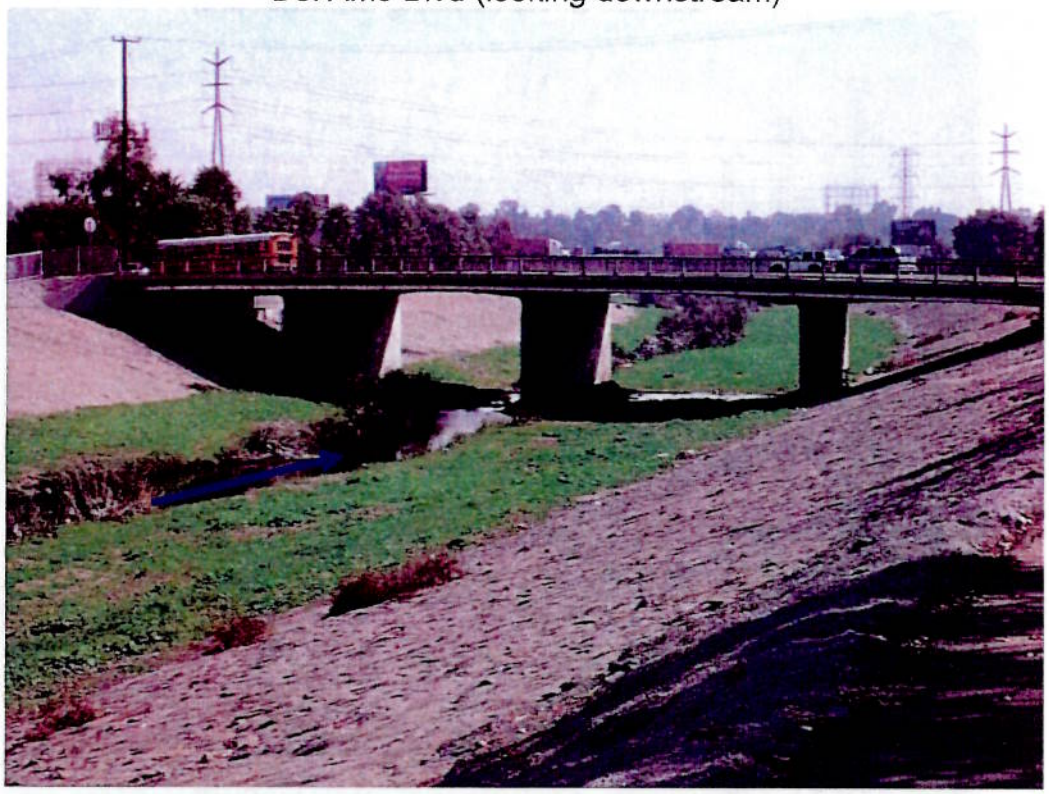
Alameda St and South Pacific Rail Road (SPRR) (looking upstream)

Santa Fe Ave (looking downstream)

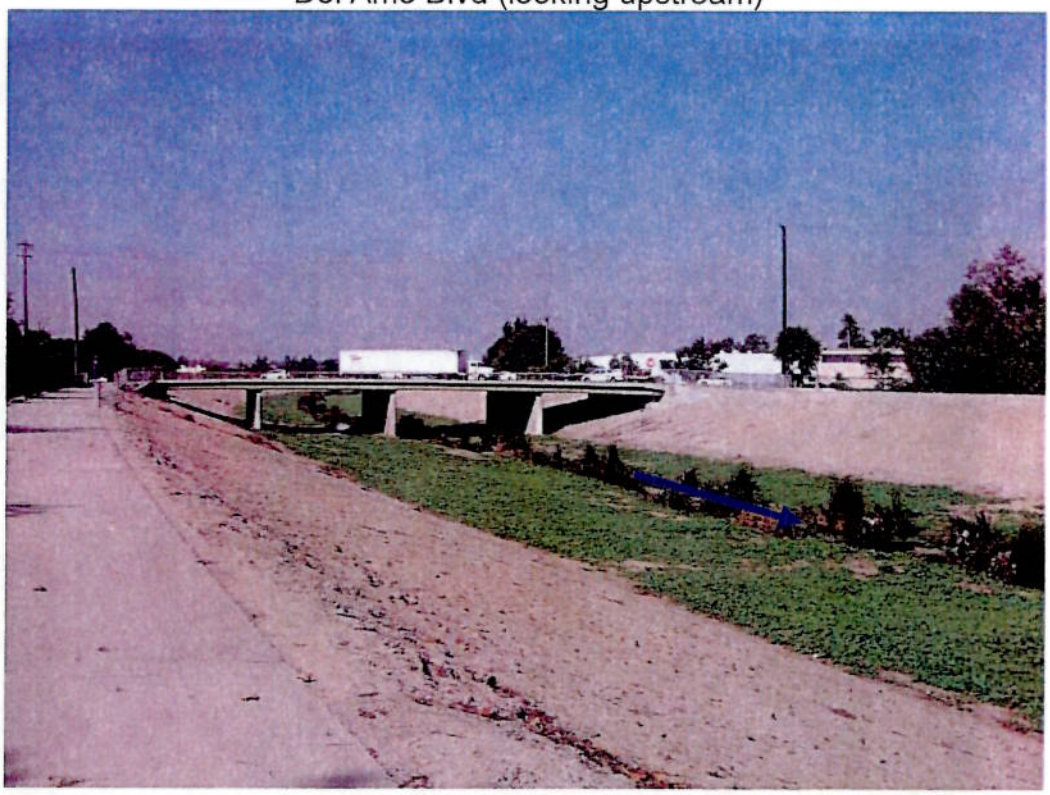
Santa Fe Ave (looking upstream)



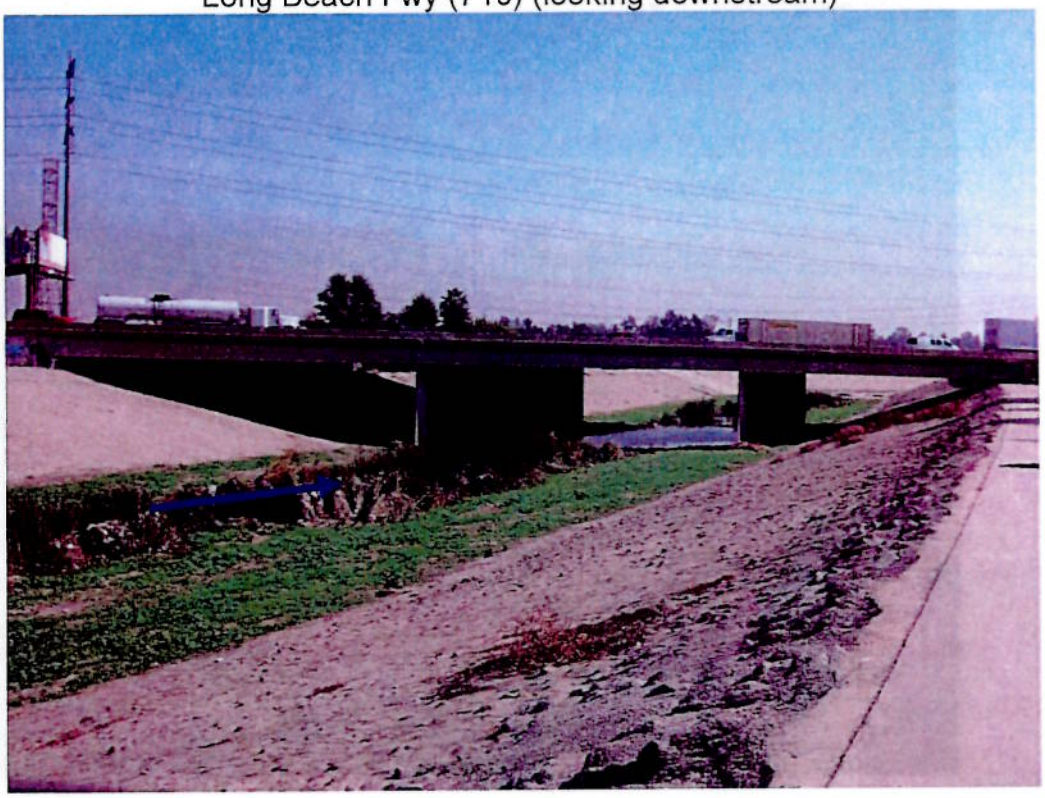
Del Amo Blvd (looking downstream)



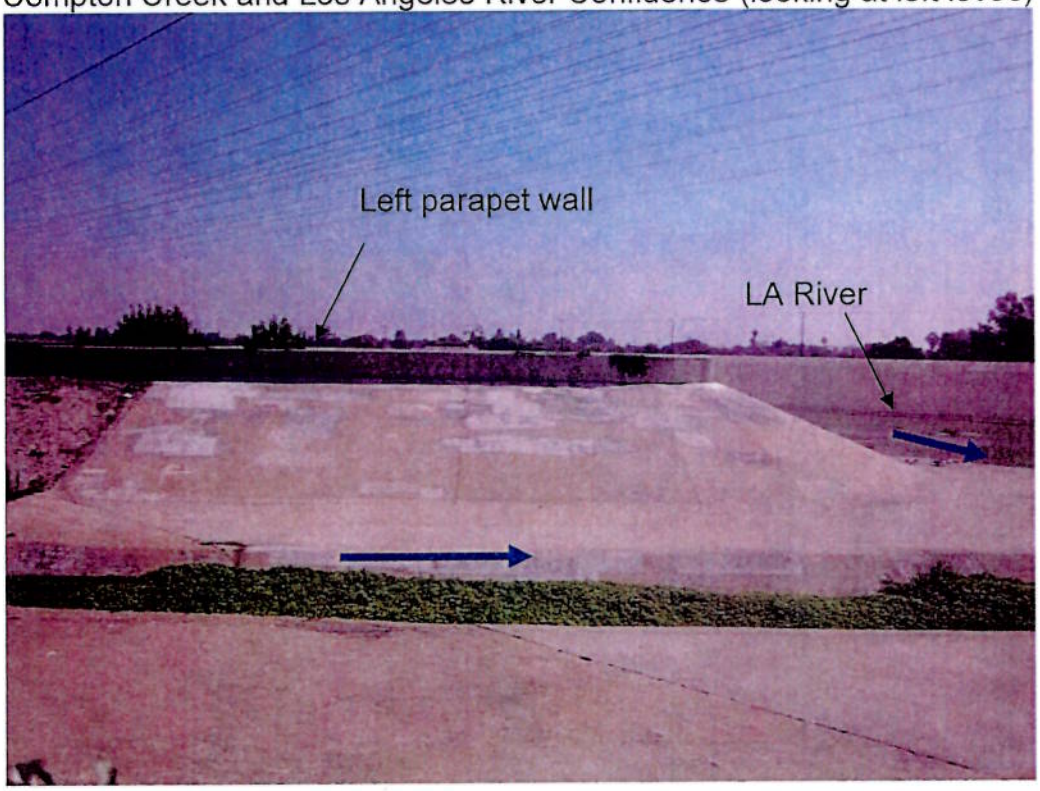
Del Amo Blvd (looking upstream)



Long Beach Fwy (710) (looking downstream)



Compton Creek and Los Angeles River Confluence (looking at left levee)



Compton Creek and Los Angeles River Confluence

APPENDIX C

Bridge Dimensions and Soffit

COMPTON CREEK
BRIDGE AND SOFFIT ELEVATION SUMMARY

	Bridge Name	Approximate Centerline Station	No. of Piers[1]	Pier Width (ft)	Bridge Width (ft)	Minimum Bridge Soffit Elevation[2]	
						Upstream XS (ft)	Downstream XS (ft)
1	Artesia Fwy (91)	204+02	2	5.0, 3.5	232.7	95.0	95.0
2	Alameda St & South Pacific Railroad	200+16	3	8.0	242.4	59.0	59.3
3	Santa Fe Ave	154+71	3	2.0	119.2	53.2	53.1
4	Del Amo Blvd	100+49	3	2.0	115.4	50.8	50.6
5	Long Beach Fwy (710)	85+95	2	2.0	180.0	53.9	54.6

Notes:

1) All pier types are elongated piers with semi-circle ends.
2) Elevations based on NAVD 1988.

APPENDIX D

Superelevation and Freeboard Summary

r, V	at WSE, W (ft)	Center-line Curvature, r (ft)	Δy (ft)	Freeboard (ft)	if 100 ft U/S and D/S of bridge	Additional Req'd Freeboard (ft)	Freeboard (ft)	Freeboard (ft)	Freeboard (ft)
	195.53			3.0	1.0		4.0	-0.4	0.2
	195.44			3.0	1.0		4.0	-0.5	-0.3
	211.35			3.0	1.0		4.0	-1.8	-0.8
	192.01			3.0	1.0		4.0	-0.4	0.6
	196.59	674.5	0.4	3.0	1.0		4.4	0.6	0.4
	193.52	674.5	0.4	3.0		0.5	3.9	0.9	0.3
	191.32	674.5	0.4	3.0		0.5	3.9	0.4	0.6
	191.50	674.5	0.4	3.0		0.5	3.9	0.8	0.6
	192.24			3.0		0.4	3.4	0.9	0.9
	193.60	5956.48	0.0	3.0		0.4	3.4	1.1	0.9
	193.00	5956.48	0.0	3.0		0.4	3.4	1.0	0.8
	194.91	5956.48	0.0	3.0		0.4	3.4	0.8	0.8
	196.07	5956.48	0.0	3.0		0.4	3.4	0.9	0.8
	197.64	5956.48	0.0	3.0		0.4	3.4	0.9	0.7
	198.60			3.0		0.4	3.4	0.8	0.7
	200.54			3.0		0.3	3.3	0.3	0.7
	199.56	2000	0.1	3.0		0.3	3.4	0.9	0.6
	202.17	2000	0.1	3.0		0.3	3.4	0.2	0.7
	200.46	2000	0.1	3.0		0.3	3.4	1.4	0.6
	197.46	2000	0.1	3.0	1.0		4.1	2.3	1.6
	198.96	2000	0.1	3.0	1.0		4.1	2.6	1.6
	200.72	2000	0.1	3.0	1.0		4.1	2.4	1.4
	200.18	2000	0.1	3.0	1.0		4.1	2.1	1.9
	201.30			3.0	1.0		4.0	1.8	1.9
	201.25			3.0	1.0		4.0	1.7	1.9
	199.59			3.0		0.3	3.3	1.6	1.7
	199.53			3.0		0.3	3.3	1.6	1.7
	199.52			3.0		0.3	3.3	1.6	1.5
	199.03			3.0		0.3	3.3	1.7	1.2
	198.81			3.0		0.3	3.3	1.6	1.2
	199.30			3.0		0.3	3.3	1.5	1.1
	201.17			3.0		0.3	3.3	1.2	1.0
	202.75			3.0		0.2	3.2	1.1	0.8
	205.08			3.0		0.2	3.2	0.6	0.6
	205.36			3.0		0.2	3.2	0.6	0.7
	209.72			3.0		0.2	3.2	0.4	0.3
	212.78			3.0		0.2	3.2	0.2	0.3
	214.12	8000	0.0	3.0		0.2	3.2	0.2	0.2
	214.02	8000	0.0	3.0		0.1	3.1	0.2	0.2
	214.33	8000	0.0	3.0		0.1	3.1	0.2	0.4
	215.73	8000	0.0	3.0		0.1	3.1	0.4	0.3
	219.17	8000	0.0	3.0		0.1	3.1	0.3	0.6
	218.61	8000	0.0	3.0		0.1	3.1	0.7	0.4
	218.84	8000	0.0	3.0	1.0		4.0	0.9	0.4

r, V	at WSE, W (ft)	Center-line Curvature, r (ft)	Δy (ft)	Freeboard (ft)	if 100 ft U/S and D/S of bridge	Additional Req'd Freeboard (ft)	Freeboard (ft)	Freeboard (ft)	Freeboard (ft)
	212.64	8000	0.0	3.0	1.0		4.0	2.1	0.7
	218.06	8000	0.0	3.0	1.0		4.0	1.1	0.6
	220.92	8000	0.0	3.0		0.1	3.1	0.7	0.8
	222.63	8000	0.0	3.0		0.0	3.0	0.8	0.8
	223.29	8000	0.0	3.0		0.0	3.0	0.8	0.8
	226.98	8000	0.0	3.0	1.0		4.0	0.8	0.8
	228.29	8000	0.0	3.0	1.0		4.0	0.3	0.9
	223.99	8000	0.0	3.0	1.0		4.0	5.9	5.3
	223.73	8000	0.0	3.0	1.0		4.0	5.9	5.3
	224.84	8000	0.0	3.0	1.0		4.0	5.8	5.3
	228.43			3.0		0.0	3.0	5.6	5.5
	228.46			3.0		0.0	3.0	5.7	5.5
	228.98			3.0		0.0	3.0	5.9	5.6
	229.41			3.0		0.0	3.0	6.0	5.6
	229.43			3.0		0.0	3.0	6.0	5.6
	229.69			3.0		0.0	3.0	5.9	5.6
	235.78			3.0		0.0	3.0	6.0	5.6

APPENDIX E

HEC-RAS Output Summary

COMPTON CREEK
HEC-RAS OUTPUT

Reach	River Sta	Profile	Q Total (cfs)	Invert Slope	Mann Wtd Chnl	Crit Depth (ft)	Max Chl Dpth (ft)	Vel Chnl (ft/s)	Top Width (ft)	Froude # Chl	Min Ch El (ft)	W.S. Elev (ft)	LOB Elev (ft)	ROB Elev (ft)	L. Freeboard (ft)	R. Freeboard (ft)
Artesia Bl - LAR	20522.45	Q100	16500	0	0.025	9.61	14.51	8.25	195.53	0.45	44.93	59.44	59.00	59.66	-0.44	0.22
Artesia Bl - LAR	20401.84		Bridge													
Artesia Bl - LAR	20280.5	Q100	16500	0	0.025	9.06	14.05	8.18	195.44	0.45	44.93	58.98	58.45	58.67	-0.53	-0.31
Artesia Bl - LAR	20143.45	Q100	16500	0	0.025	8.75	13.96	7.97	211.35	0.42	44.93	58.89	57.13	58.13	-1.76	-0.76
Artesia Bl - LAR	20016.25		Bridge													
Artesia Bl - LAR	19888.25	Q100	16500	0.0143	0.025	8.61	12.71	8.84	192.01	0.50	44.65	57.36	56.94	57.99	-0.42	0.63
Artesia Bl - LAR	19797.32	Q100	16500	0.0046	0.025	9.87	13.88	8.92	196.59	0.51	43.35	57.23	57.81	57.65	0.58	0.42
Artesia Bl - LAR	19680	Q100	16500	0	0.025	10.17	14.29	8.87	193.52	0.50	42.81	57.10	57.97	57.44	0.87	0.34
Artesia Bl - LAR	19500	Q100	16500	0	0.025	9.08	14.23	8.25	191.32	0.45	42.81	57.04	57.48	57.65	0.44	0.61
Artesia Bl - LAR	19411.27	Q100	16500	0.0003	0.025	9.11	14.13	8.33	191.50	0.46	42.81	56.94	57.72	57.53	0.78	0.59
Artesia Bl - LAR	19000	Q100	16500	0.0015	0.025	8.64	13.92	8.12	192.24	0.44	42.70	56.62	57.48	57.51	0.86	0.89
Artesia Bl - LAR	18761.58	Q100	16500	0.0024	0.025	8.60	14.12	7.93	193.60	0.43	42.34	56.46	57.54	57.40	1.08	0.94
Artesia Bl - LAR	18500	Q100	16500	0.0009	0.025	9.18	14.52	8.06	193.00	0.44	41.70	56.22	57.18	57.03	0.96	0.81
Artesia Bl - LAR	18000	Q100	16500	0.0034	0.025	8.98	14.63	7.84	194.91	0.42	41.24	55.87	56.65	56.65	0.78	0.78
Artesia Bl - LAR	17500	Q100	16500	0.0021	0.025	10.05	15.98	7.67	196.07	0.41	39.55	55.53	56.39	56.31	0.86	0.78
Artesia Bl - LAR	17131.29	Q100	16500	0	0.025	10.54	16.51	7.60	197.64	0.40	38.78	55.29	56.23	56.01	0.94	0.72
Artesia Bl - LAR	17000	Q100	16500	0	0.025	10.34	16.43	7.52	198.60	0.40	38.78	55.21	56.03	55.91	0.82	0.70
Artesia Bl - LAR	16500	Q100	16500	0	0.025	9.97	16.11	7.46	200.54	0.40	38.78	54.89	55.16	55.54	0.27	0.65
Artesia Bl - LAR	16327.43	Q100	16500	0	0.025	9.75	16.00	7.41	199.56	0.39	38.78	54.78	55.63	55.35	0.85	0.57
Artesia Bl - LAR	16000	Q100	16500	0	0.025	9.41	15.82	7.27	202.17	0.38	38.78	54.60	54.82	55.31	0.22	0.71
Artesia Bl - LAR	15800	Q100	16500	0.0062	0.025	9.09	15.71	7.19	200.46	0.37	38.78	54.49	55.86	55.08	1.37	0.59
Artesia Bl - LAR	15650	Q100	16500	0.0002	0.025	9.44	16.59	6.98	197.46	0.36	37.85	54.44	56.71	56.00	2.27	1.56
Artesia Bl - LAR	15535	Q100	16500	0	0.025	9.51	16.53	7.03	198.96	0.36	37.83	54.36	56.91	55.96	2.55	1.60
Artesia Bl - LAR	15470.57		Bridge													
Artesia Bl - LAR	15400	Q100	16500	0	0.025	9.98	16.62	7.21	200.72	0.38	37.27	53.89	56.28	55.30	2.39	1.41
Artesia Bl - LAR	15374.72	Q100	16500	0	0.025	9.51	16.62	7.02	200.18	0.36	37.27	53.89	56.03	55.74	2.14	1.85
Artesia Bl - LAR	15332	Q100	16500	0	0.025	9.77	16.57	7.13	201.30	0.37	37.27	53.84	55.59	55.72	1.75	1.88
Artesia Bl - LAR	15300	Q100	16500	0.0038	0.025	9.86	16.54	7.17	201.25	0.37	37.27	53.81	55.50	55.67	1.69	1.86
Artesia Bl - LAR	15128	Q100	16500	0	0.025	10.12	17.11	7.07	199.59	0.36	36.62	53.73	55.35	55.39	1.62	1.66
Artesia Bl - LAR	15120.5	Q100	16500	0	0.025	10.12	17.10	7.07	199.53	0.36	36.62	53.72	55.35	55.38	1.63	1.66
Artesia Bl - LAR	15113	Q100	16500	0	0.025	10.11	17.10	7.07	199.52	0.36	36.62	53.72	55.35	55.22	1.63	1.50
Artesia Bl - LAR	15000	Q100	16500	0	0.025	10.02	17.04	7.07	199.03	0.36	36.62	53.66	55.32	54.88	1.66	1.22
Artesia Bl - LAR	14950	Q100	16500	0	0.025	10.13	16.99	7.16	198.81	0.37	36.62	53.61	55.23	54.77	1.62	1.16
Artesia Bl - LAR	14900	Q100	16500	0.0006	0.025	10.07	16.97	7.12	199.30	0.37	36.62	53.59	55.05	54.69	1.46	1.10
Artesia Bl - LAR	14500	Q100	16500	0	0.025	9.76	17.01	6.92	201.17	0.35	36.39	53.40	54.57	54.38	1.17	0.98
Artesia Bl - LAR	14000	Q100	16500	0.0034	0.025	9.58	16.75	6.91	202.75	0.35	36.39	53.14	54.21	53.89	1.07	0.75
Artesia Bl - LAR	13500	Q100	16500	0.0014	0.025	9.61	18.33	6.24	205.08	0.31	34.69	53.02	53.64	53.57	0.62	0.55
Artesia Bl - LAR	13000	Q100	16500	0.0022	0.025	10.15	18.82	6.29	205.36	0.31	33.99	52.81	53.45	53.51	0.64	0.70
Artesia Bl - LAR	12500	Q100	16500	0.0016	0.025	10.70	19.76	6.08	209.72	0.30	32.90	52.66	53.06	53.00	0.40	0.34
Artesia Bl - LAR	12000	Q100	16500	0.0001	0.025	10.90	20.39	5.91	212.78	0.29	32.12	52.51	52.72	52.80	0.21	0.29
Artesia Bl - LAR	11915.27	Q100	16500	0	0.025	10.87	20.37	5.87	214.12	0.29	32.11	52.48	52.64	52.67	0.16	0.19
Artesia Bl - LAR	11650	Q100	16500	0	0.025	10.72	20.30	5.81	214.02	0.28	32.11	52.41	52.60	52.60	0.19	0.19
Artesia Bl - LAR	11500	Q100	16500	0.0022	0.025	10.45	20.26	5.71	214.33	0.27	32.11	52.37	52.57	52.80	0.20	0.43
Artesia Bl - LAR	11000	Q100	16500	0	0.025	10.84	21.25	5.54	215.73	0.26	31.00	52.25	52.60	52.52	0.35	0.27
Artesia Bl - LAR	10500	Q100	16500	0	0.025	10.65	21.13	5.44	219.17	0.26	31.00	52.13	52.46	52.70	0.33	0.57
Artesia Bl - LAR	10307.5	Q100	16500	0	0.025	10.61	21.07	5.47	218.61	0.26	31.00	52.07	52.78	52.44	0.71	0.37
Artesia Bl - LAR	10240	Q100	16500	-0.0001	0.025	10.64	21.06	5.47	218.84	0.26	31.00	52.06	53.00	52.42	0.94	0.36
Artesia Bl - LAR	10110	Q100	16500	0	0.025	10.02	21.02	5.40	211.15	0.25	31.01	52.03	53.01	54.11	0.98	2.08
Artesia Bl - LAR	10049.32		Bridge													

Note: Elevations based on NAVD 1988

COMPTON CREEK
HEC-RAS OUTPUT

Reach	River Sta	Profile	Q Total (cfs)	Invert Slope	Mann Wtd Chnl	Crit Depth (ft)	Max Chl Dpth (ft)	Vel Chnl (ft/s)	Top Width (ft)	Froude # Chl	Min Ch El (ft)	W.S. Elev (ft)	LOB Elev (ft)	ROB Elev (ft)	L. Freeboard (ft)	R. Freeboard (ft)
Artesia Bl - LAR	9975	Q100	16500	0	0.025	11.00	21.63	5.50	212.64	0.26	30.17	51.80	53.85	52.45	2.05	0.65
Artesia Bl - LAR	9828	Q100	16500	0	0.025	10.82	21.60	5.36	218.06	0.25	30.17	51.77	52.91	52.35	1.14	0.58
Artesia Bl - LAR	9500	Q100	16500	0	0.025	10.55	21.53	5.24	220.92	0.24	30.17	51.70	52.40	52.49	0.70	0.79
Artesia Bl - LAR	9050	Q100	16500	0	0.025	10.15	21.44	5.14	222.63	0.24	30.17	51.61	52.40	52.42	0.79	0.81
Artesia Bl - LAR	9000	Q100	16500	0	0.025	10.17	21.43	5.13	223.29	0.24	30.17	51.60	52.40	52.40	0.80	0.80
Artesia Bl - LAR	8802	Q100	16500	0.0004	0.025	9.64	21.41	4.97	226.98	0.23	30.17	51.58	52.39	52.39	0.81	0.81
Artesia Bl - LAR	8695	Q100	16500	0	0.025	9.50	21.43	4.89	228.29	0.22	30.13	51.56	51.85	52.45	0.29	0.89
Artesia Bl - LAR	8594.9		Bridge													
Artesia Bl - LAR	8506	Q100	16500	0	0.025	9.81	21.58	4.95	223.99	0.23	29.90	51.48	57.39	56.75	5.91	5.27
Artesia Bl - LAR	8458	Q100	16500	0	0.025	9.83	21.57	4.94	223.73	0.23	29.90	51.47	57.37	56.75	5.90	5.28
Artesia Bl - LAR	8400.37	Q100	16500	0.0001	0.025	9.84	21.56	4.94	224.84	0.23	29.90	51.46	57.30	56.79	5.84	5.33
Artesia Bl - LAR	8059	Q100	16500	0	0.025	9.65	21.52	4.86	228.43	0.22	29.88	51.40	57.04	56.91	5.64	5.51
Artesia Bl - LAR	8058	Q100	16500	0.0029	0.025	9.67	21.52	4.87	228.46	0.22	29.88	51.40	57.05	56.91	5.65	5.51
Artesia Bl - LAR	8030	Q100	16500	0.0148	0.025	10.54	21.56	5.03	228.98	0.23	29.80	51.36	57.28	56.92	5.92	5.56
Artesia Bl - LAR	8003	Q100	16500	0.0200	0.025	10.80	21.96	5.00	229.41	0.23	29.40	51.36	57.34	56.92	5.98	5.56
Artesia Bl - LAR	8002	Q100	16500	0.0147	0.025	10.81	21.98	5.00	229.43	0.23	29.38	51.36	57.34	56.92	5.98	5.56
Artesia Bl - LAR	7985	Q100	16500	0.0147	0.025	10.64	22.24	4.91	229.69	0.23	29.13	51.37	57.29	56.93	5.92	5.56
Artesia Bl - LAR	7927	Q100	16500		0.025	11.31	23.09	4.77	235.78	0.22	28.28	51.37	57.39	56.95	6.02	5.58

Note: Elevations based on NAVD 1988

APPENDIX F

Computer Files